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VOLUME XXVII NUMBER 1

THE AGRICULTURAL STUDENT

OHIO STATE UNIVERSITY, COLUMBUS, OHIO

"It ain't the guns nor armament, nor funds that they can pay,
But the close co-operation that makes them win the day;
It ain't the individual nor the army as a whole,
But the everlastin' team work of every bloomin' soul."

— KIPLING.

SEPTEMBER, 1920

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JUN 19 1922

Contributors

W. O. THOMPSON
G. W. CONREY
SAMUEL M. SUMMER
BERTRAND BROWN
CLIVE McGUIRE
C. F. MOSES
A. P. SANDLES
ROBERT F. SCHRYVER
ROBERT F. MAYNE
THOMAS E. BERRY
JOHN F. DOWLER
ALFRED VIVIAN

To the Pioneers of Agricultural Education of Ohio

Who by their untiring zeal and effort in the years 1862 to 1878, made possible this Ohio State University, laying the foundation such that the past five decades, tho taken in gigantic strides of progress, show only the possibilities of what is in store, is this volume of

The Agricultural Student

respectfully dedicated.

Columbus, Ohio, July 6, 1920.

It is a very sincere pleasure to have the opportunity to commend to the readers of the Agricultural Student some consideration of the celebration of the Semi-Centennial of Ohio State University. The University is particularly happy and fortunate in having at its command the services of men who go back in their experience to the original days and are able out of this experience to collect for us accredited and somewhat extended information as to the early days of the institution. Historical volumes will be published and the occasion will be graced with some stimulating historical addresses. Other features common to such celebration will be developed so that altogether the University hopes not only to fix with accuracy some of the historical foundations, but to arouse a new interest in the University.

The College of Agriculture in modern years has been a large part of the history of the University. We very sincerely hope, therefore, that the alumni and alumnae of the College of Agriculture will return in large numbers and join us in a very happy celebration.

W. O. THOMPSON.

To the Alumni and Ex-Students of the College of Agriculture:

The Ohio State University will on October 13th to 16th, inclusive, celebrate the fiftieth anniversary of its founding. This should be the great home-coming event in the history of the University, when your Alma Mater will have the opportunity of welcoming back to the campus the thousands of her children who have gone forth to take their places in the great work of the world. May I not especially urge all of the loyal sons and daughters of the College of Agriculture to "come home" at the time of the Semi-Centennial? This celebration should mean even more to you than it does to the alumni and students of some of the other colleges, for do you not remember that fifty years ago this great institution began its career as the "Ohio College of Agriculture and Mechanic Arts." From that time to this day the University has given a prominent place to instruction in Agriculture and it was one of the first institutions in the country to offer a course in Home Economics. It is especially fitting, therefore, that you of the College of Agriculture should return in full force at the time of the jubilee celebration. It is unnecessary to state that every effort is being put forth to make this the greatest event in the history of the University, but it will not be a complete success unless the former students of the University respond to the invitation in large numbers. Will you not show the world that of the many sons and daughters of the Ohio State University there are none more loyal than those of the College of Agriculture?

ALFRED VIVIAN, *Dean.*

The Agricultural Student

VOL. XXVII OHIO STATE UNIVERSITY, COLUMBUS, OHIO, SEPTEMBER 1920. No. 1

SOILS, SOIL CHARACTERISTICS AND THEIR RELATION TO FERTILIZER REQUIREMENT

By G. W. Conrey.

(Mr. Conrey is an expert on soil textures and is gradually being recognized thruout the United States. Everything he gives in this article is certainly worth while to all of us.)

THE problem of the selection of the proper fertilizer is one that frequently confronts the farmer. In making the decision it is important to recognize that we fertilize the soil to grow the crop, rather than simply fertilizing the crop. A consideration, then, of the character of the soil and its relation to fertilizer practice is important.

That soils vary markedly in productivity is well known. The crop that is grown on any piece of land is dependent on a number of factors, including the length of time the soil has been cropped and the treatment the land has received during that period, as well as the character of the soil itself. One has only to examine into the nature of the original timber growth of the land to see that even in the virgin soil there were outstanding differences in production. It is the normal thing, then, to expect differences in fertilizer requirements, based on differences in soils.

Of the characteristics which determine the fertility of the soil probably none is more important than texture. By texture is meant the size of the particles which make up the soil, whether it is a sand, a sandy loam or a clay loam. The power of the soil to hold water, so important in crop growth, is closely related to the texture. On sandy soils crops may suffer from a lack of water even in regions of rather large rainfall. The supply of plant food in the soil is largely determined by its texture, since a large part of the phosphorus and potassium, elements essential for plant growth, is associated with the finer particles. The power to absorb and hold in the soil soluble plant food is also associated with the clay particles. Dependent on texture is the ease with which roots can penetrate the soil, also the readiness with which oxygen can enter it to be used by the roots and by bacteria in developing nitrates and to oxidize the organic matter.

Closely related to texture is the structure of the soil—that is the arrangement of the particles within the soil, whether in single grains as in sands, or grouped together in clusters as in a clay soil in good tilth. It is evident that the texture of the soil is a constant characteristic, while the structure can be modified. The smaller the size of the grains, that is the finer the texture, the greater is the tendency to cling together so that when cultivated the soil tends to break up into lumps. When such soils are wet the particles tend to fall apart or run. This effect is increased if the soil is stirred when wet. Such a soil on drying will become very hard and if cultivated in that condition will break up into lumps giving a very undesirable structure. Any means which will help to prevent this tendency to run and cause the clay to flocculate will aid in giving to the soil

a structure favorable to plant growth.

Second in importance to texture as a soil characteristic is color. Color in soils is of importance, not in itself, but because of what it indicates as to the character of the soil. First of all the degree of oxidation, resulting from the condition drainage, is shown by the color; brown soils being on the whole well drained, while a green color indicated a poorly drained soil. These colors are modified by the organic matter which the soil contains, a black soil being high in organic matter and naturally poorly drained. In case the soils are made up largely of organic matter they are called muck or peat. The presence of organic matter in the soil is of importance in a number of ways. Its effect in increasing the water holding capacity, especially in sands; in modifying the structure of both clay and sandy soils; and in furnishing through its decomposition carbon dioxide, which with water is the great solvent in soils, are of such importance that any successful system of soil management must include the maintenance and increase of the supply of organic matter.

The reaction of the soil—whether or not it is acid—is of importance in crop production. Some soils are acid in the virgin condition, while others as a result of years of cultivation have developend an acid reaction. This condition is reflected in a difficulty in securing a stand of alfalfa, and in failures of clover on land where once excellent crops were grown. Clover failures are costly, for the benefit of a legume as a nitrogen gatherer and in supplying organic matter is lost.

Numerous other soil characteristics might be mentioned as modifying the nature of soils. Topography and drainage of the land have already been mentioned in their effect in modifying the color of soils. The mode of origin and kind of rock from which the soils have been formed determine to a large extent the character of the material both physically and chemically which makes up the soil. Glacial soils differ from residual soils, and those formed from limestone are unlike those formed from sandstone and shale.

With these various differences in character of soils in mind, let us inquire into their relation to fertilizer requirement. It must be remembered that the furnishing of the plant directly with certain elements necessary for its growth is only one of the several uses of materials added to the soil. Besides this, some liberate other elements from the soil, some give favorable conditions for the devlopment of nitrifying and other bacteria necessary for a fertile soil, while in other cases the fertilizers may modify the structure of the soil so as to improve the tilth.

Consider first of all a sand soil. It has been said that "a sand soil is not a soil, but a place to make one." Because of the open porous nature, such a soil, naturally low in fertility, is subject to excessive leaching. An increase in crop production can be brought about best by increasing the organic matter and water holding capacity thru the growth of legumes. Before legumes will make a good development deficiencies in the essential elements must be supplied. This should include the use of potassium, as the sulphate if potatoes are to be grown, and phosphorus as acid phosphate. It is recognized that at present prices the use of potassium is almost prohibitive, but beneficial results have been shown both in Indiana and Wisconsin where there are large areas of poor sandy soils.

If nitrogen fertilizers are to be used,

probably some of the more insoluble organic forms such as dried blood would be better than sodium nitrate or sulphate of ammonia because of the possibility of these more soluble forms leaching away. It is preferable to depend upon the growth of legumes for the nitrogen. Since these soils are almost invariably acid, the use of some form of lime is very essential especially because of the importance of the growth of legumes.

Peat and muck present the other extremes since they are made up very largely of organic matter, which is almost entirely absent in many sandy soils. The result is that these soils are almost invariably low in the mineral elements, especially potassium and sometimes phosphorus. The results from the use of potassium on muck and peat furnish one of the most remarkable examples of the effect of the use of one element on soils. Two hundred pounds of a potassium fertilizer have made the difference between no crop and a 70 bushel crop of corn. Either the muriate or sulphate can be used with most crops grown on marsh soils.

In the case of phosphorus the absolute necessity for its use does not seem to be quite as general as is true for potassium. Marshes vary in their requirements. Acid marshes are usually low in their supply of available phosphorus, and will show marked results from its use in fertilizers. Other areas of peat and muck may not show a great response from similar treatment for the first few years of cropping, but in time a need will develope. Phosphorus can be supplied in the form of ground steam bone meal or acid phosphate. In Europe basic slag is favored for such soils, but it is little used in this country. Because of the large amount of organic matter it would seem that the untreated rock phosphate or floats might be effective in the long run, but it does not give such marked results the first year or two.

Where marsh soils are acid, liming will prove beneficial, not only in neutralizing the acidity and supplying a base needed in the process of nitrification, but also in furnishing the element calcium which may be deficient.

The heavy upland soils can be considered as a unit, altho it is evident that such a group will include a wide range of conditions. These would include the most intensively cultivated soils thruout Ohio and the surrounding States. As a result of a long time of cultivation considerable areas have become more or less depleted of their virgin fertility. This has shown up first in a deficiency of available phosphorus. Invariably the application of a phosphate fertilizer has proven to be beneficial. The work of the Ohio Experiment Station has shown that acid phosphate is the best form in which to supply this element, and that its use will prove to be profitable on practically all of the upland soils of the State.

Where an acid condition of the soil exists, the use of some form of lime is second in importance only to the use of acid phosphate. In this connection it is well to point out that no apprehension need be felt in the acid phosphate because of the possibility of increasing the acidity of the soil. Here again the Experiment Station has shown that its use does not increase the acidity. Not only does the application of lime make possible the growth of clover and alfalfa, but it also has a marked effect on the structure of the soil in that it aids in flocculation and in securing a good tilth, especially on heavy clay.

Potassium is not apt to be a limiting

(Continued on page 48)

AGSTONE THE MAGIC STONE

By A. P. SANDLES.

(Mr. Sandles was formerly State Secretary of Agriculture, but is now Secretary of the National Limestone Association.)

"AGSTONE" is a good thing boiled down. It is both ends of "Agricultural Limestone." It is common sense and copper cents. It makes clover grow and farmers crow. It puts pep and punch in lazy land. It is father and mother of farm prosperity. It fattens pocket-books.

"Agstone" is the Magic Stone. It is God's natural remedy for sick and sour soil. It tickles tired, grouchy fields and makes them laugh a harvest.

Soil must be sweet and smiling before nitrogen will enter or abide therein. Nitrogen is the "Elixir of Life" to all productive land. Limestone chases acid out and invites nitrogen in.

Agricultural Limestone gives to the knotty nodule, on the clover root, its mystic and invisible power to pump nitrogen from air into soil. A field fed on Limestone will grow clover and cash checks. A bank cashier never questions a check signed by Mr. Agstone or Mr. Nitrogen.

God knew his business when He hauled and unloaded Limestone in convenient places for man's use. He pointed the way and taught a lesson when his winds wafted Limestone dust from stone-paved highway to road-side fields. This blessing caused clover to flourish and enrich the earth on which stone dust fell.

Odd. Queer. It took a man a few thousand years to discover the "Agstone" blessing at his door and the treasure within his reach. He was slow to realize that at his feet was a cure for ills of farm and field. He had illusion that far away was to be found "The Goose that could lay a Golden Egg."

It's the old story of the man who went far a-field in search of Acres of Diamonds. He found them not. He died poor. The diamonds he sought were in the sand and soil around the spring at which he had oft filled pitcher or pail. Ten thousand times his feet had trod on diamonds of famous Golconda fields, while he was dreaming of gems far away.

"Agstone" will add more to human welfare and human happiness than will all the sparkle-stone that earth has yielded or may hold. "Agstone" is a blessing to all. Diamonds are playthings of the few.

The story of "Bread from Stone" by Dr. Cyril G. Hopkins, is a tribute to the productive value of Limestone. It is a safe investment. It is a paymaster that pays sure dividends. It is a mighty factor in feeding a hungry world.

We are all trying to make sure of a meal ticket for life. Bread and butter will always be fashionable. Ham and eggs will never go out of style. Breakfast, dinner and supper are three chapters never omitted from the Book of Living.

Food production is the call of the world today. Meal tickets are not on bargain counters. Menu cards announce no excursion rates to dining room or lunch counter.

Folk flow from farm over-flows skyscrapers, city flats and tenement houses. City rents and home values soar while the house at the side of the road is deserted. A token of decay and decline of rural America.

"Agstone" has power to make farm more profitable. It has power to in-

crease crop production. It has power to help keep folks on the farm. It has power to help avoid "soup-house and bread-line" that may curse city crowd.

"Agstone" works while you sleep. It fits the field every day of the year. It can be spread before or after seeding.

Dr. Charles E. Thorne, Director of Ohio Experiment Station, has said "Ohio needs one inch of lime over it." Natural pulverized Limestone can do soil no damage. There has been debate whether burned lime will damage humus in land. There is no debate on "Agstone."

Science is common sense boiled down, going in right direction to right place. Science proclaims "Agstone" a blessing. Experiment Stations, Colleges of Agriculture, Farm Press and County Agent have created demand for Limestone.

Prof. Bachtell, Ohio State University, in public speech at Florence, Erie County, Ohio, stated three tons of Limestone equals in effect on soil to two tons of burned lime, hydrated. If two tons of burned lime are used on an acre, or three tons of "Agstone," it is interesting to examine the cost. If lime costs $12 a ton and limestone $4 a ton, then two tons of lime on the acre cost $24. Three tons of limestone on the acre cost $12. The farmer gets as much

(Continued on page 48)

Five acres of soy beans given one application of raw ground Limestone, one and one-half tons per acre. Mr. Albert Jacobs, Attorney-at-Law, Wellston, Ohio, says: "If Limestone is accessible, I would not plow a field without applying ground Limestone before putting back to grass."

THE STADIUM FOR OHIO

By SAMUEL N. SUMMER, '05.

(Mr. Summers is the president and treasurer of the Joseph Schonthal Co., one of the leading industries of Columbus, and vice-president of the West Virginia Rail Co., Huntington, W. Va. As chairman of the Ohio Stadium Committee, he is directing the work of organizing the alumni, former students and friends of the University for a campaign to raise a fund of one million dollars this fall with which to build the long talked of Ohio Stadium. Summer is a keen business man, a skilful organizer and an active alumnus.)

BEING neither a farmer nor a writer, this is the first opportuntiy I have had of "breaking into print" by way of THE AGRICULTURAL STUDENT. I am achieving this now because it has been my honor and my privilege to be selected chairman of the Ohio stadium committee, which proposes, with the loyal support of the alumni, former students and friends of the University, to raise $1,000,000 and with it build the structure from which it derives its name.

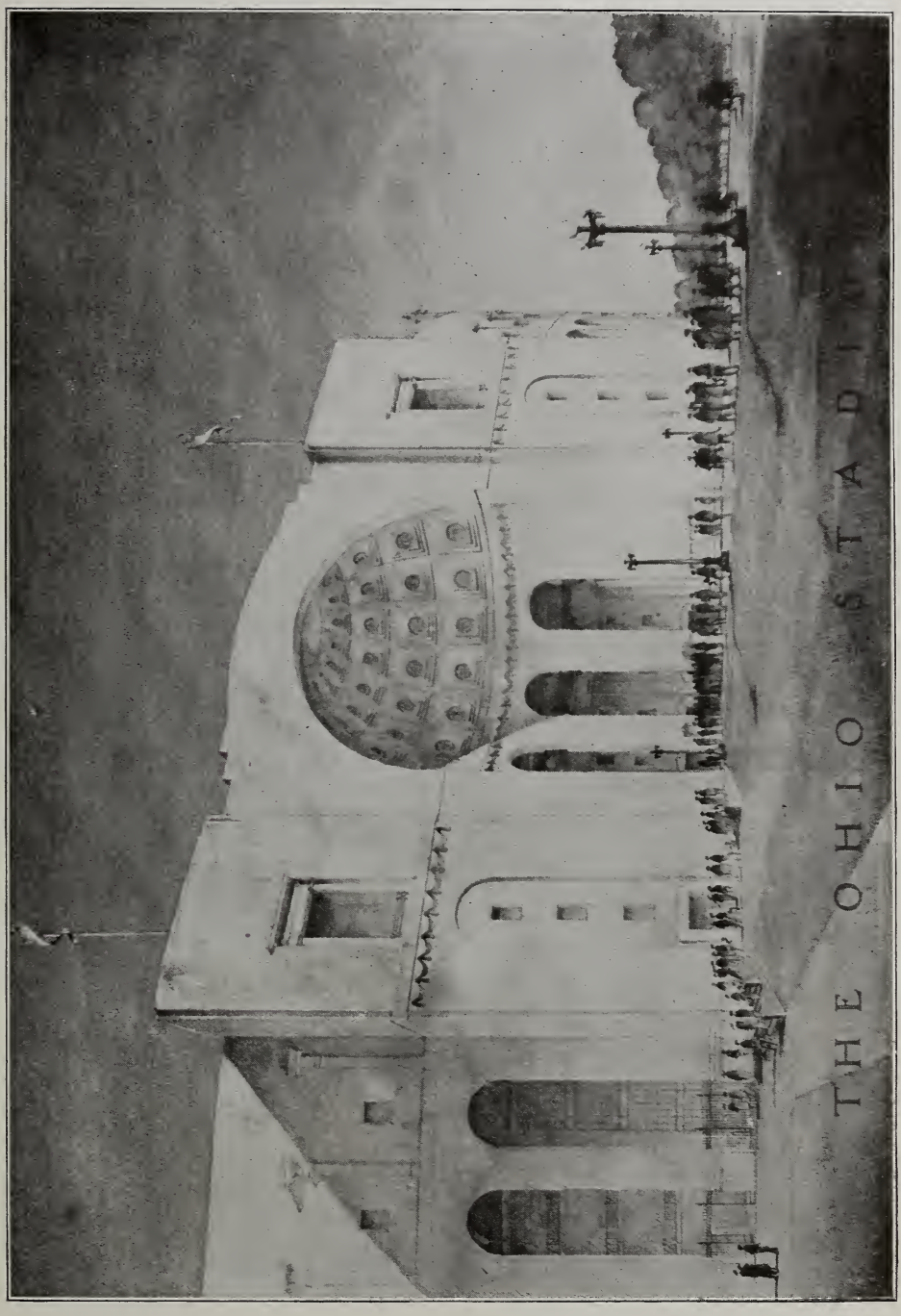
You have heard stadium talk before. The need of a great amphitheatre for the University has been apparent for several years. Under the wise and careful administration of our progressive president, Dr. William Oxley Thompson, Ohio State has had a remarkably rapid growth. Men and women have come here by additional thousands so that the old school ranks today as the ninth largest university in the country and the fourth largest state supported institution of higher learning. Within a few years, according to the most conservative estimate, more than 10,000 students will be enrolled, which total we fall short of at the present by only 2.500.

The war stressed the necessity of physical education. Previous to it, our universities and colleges were inclined to assume that physical vigor was of lesser importance than mental vitality so that with few exceptions they gave little thought to the development of the body that houses the mind. Now physical education is a requirement. Instead of a few skilled athletes being afforded the opportunity to participate in clean, wholesome, competitive play, through plants maintained by athletic associations, the new idea is for the institutions to provide thousands of undergraduates as strong an incentive to get out into the open and exercise. "Everybody in the game" is the slogan.

Ohio Field has become inadequate for State's varsity teams. More than 20,000 were turned away from the final game of the football season with Illinois, last November, upon the outcome of which depended the championship of the Western Conference. It was, therefore, utterly inadequate as a playground for the nearly 4,000 students who tried to participate in various forms of competitive sport here last year. The gymnasium was built when we had a student body of less than 2,000. The military department has been forced to use a large portion of the campus for its work which is done under severe handicaps.

Appreciating these facts, the trustees have turned over 92 acres of land along the banks of the Olentangy river, west of Neil avenue, for development as a recreational and athletic field. It is our purpose to place at the head of this unequaled playground, a stadium commensurate in size to the requirements of the institution and which will be a worthy tribute from us to Ohio State's first fifty years of constructive service and accomplishment in the field of higher learning.

The stadium will be for all Ohio and has been appropriately named The



ENTRANCE TO PROPOSED STADIUM.

Ohio Stadium. It will have two seating levels in elevation—a distinct departure from and advantage over stadia thus far constructed in this country—and will seat comfortably 63,000 people. If its seating were laid out in a single line it would reach out for 21 miles from Columbus. It will be 107 feet high or nearly twice the height of the library building. There will be 83 entrances and 56 stairways will feed 112 aisles, all having a circulation capacity to empty the stadium in seven minutes. The arena will cover 150,000 square feet. The north, or closed end, will have a movable stage that can be used for open air plays before an audience of 20,000. Under the seating space there will be locker rooms, etc., and two large spaces available for indoor horse shows, industrial exhibitions, automobile shows and indoor athletic activities.

Commencement exercises may be held here without limits being placed upon the number of people wishing to witness the ceremonies.

The stadium will open out into the recreational field, to be known as The New Ohio Field, which, among other things, will include five football diamonds, twenty baseball diamonds, tennis courts and a space for military maneuvers.

President Thompson has highly endorsed our undertaking as "one factor in a series of great projects" for a bigger and better Ohio State. He, with the rest of us, has been thrilled and inspired as he has contemplated it, for at last we are about to realize the dream picture that for years has been in the foreground of our thought.

The medium through which we are going to get the necessary fund for the stadium is called a campaign. I do not care much for the word "campaign." At worst it is some better than its older brother "drive," but at best it falls short of what I would prefer calling the undertaking. The word I like probably hasn't been discovered so I shall set down that we are going to raise the fund by some good, honest, hard work among ourselves and our friends; by giving the project our wholehearted endorsement backed by financial self-sacrifice and get others to do likewise. Thereby we will try to pay our great debt of gratitude to the institution that has nourished us and fostered us for our careers.

We shall hand down to posterity the names of those who make the stadium an actuality by placing bronze tablets on the structure itself which will lend to rather than detract from its architectural beauty. A minimum subscription of $100 will be accepted outside of the student body, payable in semi-annual installments over a period of two years. For students, the minimum subscription is $25. The first installment in all cases will fall due January 1, unless the initial payment is made with the pledge.

The following inducements are offered subscribers: Those who give $5,000 or more will be known as Founders. Their names will be inscribed on a bronze tablet on the center pillar of the main entrance, boxes off the field will be named in their honor and an option for a box or as many seats in it as they desire will be open to them. Those who give $1,000 or more, up to $5,000, will be known as Patrons. Their names will be inscribed in bronze on tablets to be set in the other pillars of the main entrance to the stadium and they will have an option for six seats in the stadium for ten years after it is completed. Those who give $200 or more, up to $1,000, will be known as Donors. Their

names will be inscribed in bronze on tablets conspicuously located and an option on four seats will be given them for ten years after the stadium is completed. Those who give $100 or more, up to $200, will be known as Subscribers. Their names will be inscribed on bronze tablets prominently placed and they will be given an option on two seats for ten years after the stadium is completed.

At this writing — August 14 — we have started our organization in 61 districts and counties of Ohio. By September 1st, we expect the organization to be completely set up and preliminary canvassing begun. Intensive soliciting for the fund will commence October 18, the Monday following the Semi-Centennial celebration.

I urge you to join with us early in this first effort to do something noteworthy for alma mater. Decide to subscribe and get others to follow you. The stadium will be the pride of all Ohio, not alone the University. Every true Ohioan is a potential giver.

We have started marching with the right foot. We are going to see this undertaking through to successful culmination. Fall in and be one of us.

HOW THE BANKER HELPS THE FARMER

By ROBERT H. SCHRYVER.

(The author of this article is president of the Citizens Trust and Savings Bank of Columbus, Ohio. For several years he was secretary of the Ohio Bankers Association and among the progressive steps taken while in that office was the development of the plan whereby bankers, even from the larger cities of the state, took a more intense interest in the subject of agriculture, helping the farmers in many ways. He was also president of the First National Bank of Mt. Sterling, Ohio, for fifteen years prior to coming to Columbus, as well as manager of his seven hundred acre farm.)

FARMERS are business men and they are getting keener every day. Bankers are business men and they are watching their affairs during these reconstruction days, closer than ever.

It is but natural that these two classes of business men should be learning to help each other more and more as the days and months go by.

As agriculture is the greatest industry in America and as each farmer even though he works only a small number of acres is a cog in the great system, the bankers of the city and county districts are seeing to it that the farmers are given funds with which to operate their farms to the highest point of efficiency.

That does not mean that the banker, either in the city or the small town or village, is indiscriminately loaning his funds to the farmers. The farmer must have property or prospects of such crops that the banker is certain to get his money back or the funds will not be forthcoming.

Food is the crying need of America right now and Ohio is one of the garden spots of the world. Thus there is laid upon the bankers of Ohio, whether they want it or not the burden of assisting the farmer in making good.

And often it is only necessary for the banker to make a suggestion to the farmer to have him do the things which mean greater production, with great money coming to the farmer and with greater ability on his part to pay back the money borrowed from the bank, as soon as his crops are harvested and sold.

With very few exceptions, the farmer takes suggestions from his banker in good grace and to the extent of his ability, does what he can to reach the improved farming conditions outlined by his banker.

Since the federal income tax law has been in effect for the past three years, the farmer of necessity has been compelled to become a business man, keeping books and doing other things which are connected with the operation of a business. The fact that the farmer is keeping books and knows whether or not he is losing money on raising a certain crop or on feedling live stock, makes it easier for the banker to know of the standing of the farmer from a business basis. Thus the matter of making a loan from his bank has been simplified for the farmer.

Many a farmer in various sections of the state, owes to his banker, his stepping from a bare living to a living and ten per cent. Time and again has the banker by dropping a hint or making a suggestion caused the farmer to paint his home, beautify his premises, buy modern machinery, build a silo and do other things which have been of lasting value to the farmers.

One of the greatest charms of the life of a banker, especially the banker who deals intimately with the farmer, is to see that farmer prospering. The relation between the farmer and his banker is as close and of as confidential nature often as between the farmer and his preacher and the farmer and his lawyer. Contrary to the general impression, bankers do not tell customers of the affairs of other customers, having a high regard for the faith which is shown in them when the farmers frankly and freely discuss their problems, financial and otherwise.

Even brighter days are coming for the farmers of Ohio and the bankers will have a still greater share in shaping the agricultural growth of the state. The closer the relations between the farmer and the banker, the better can they work for their mutual advantage.

TO CELEBRATE THE 300th ANNIVERSARY OF AMERICA'S ORIGIN

By BERTRAND BROWN.

(The year 1920 is doubly significant, historically. It marks the three hundredth anniversary of two important events which led to the founding of the Republic of the United States of America. One is the signing of the Mayflower Compact and the landing of the Pilgrims; and the other is the meeting of the first American legislative assembly.)

ON November 11, 1620, in the cabin of the Mayflower, a tiny bark lying off the Massachusetts coast, a little band of liberty-loving men, from "Brittania," entered into what history has styled the Mayflower Compact. This agreement bound the forty-one adult males in the ship's company into a civil body politic for the better ordering, preserving, and furthering of their mutual ends. And it provided for such just and equal laws and offices as should be necessary for the general good of the colony.

Ten days later, so records Dr. Charles W. Eliot's inscription on the Pilgrim Memorial Monument at Provincetown, Mass., "the Mayflower, carrying 102 passengers, men and women and children, cast anchor in this harbor 67 days from Plymouth, England.

"This body politic, established and maintained on this bleak and barren edge of a vast wilderness, a state without a king or a noble, a church without a bishop or a priest, a democratic commonwealth, the members of which were straitly tied to all care of each other's good, and of the whole by every one.

"With long-suffering devotion and sober resolution they illustrated for the first time in history the principles of civil and religious liberty and the practice of a genuine democracy."

Meantime, uninformed of the Pilgrims, fellow-colonists of Captain John Smith had met at "James City" (Jamestown), Virginia, for the first American Legislative Assembly. On July 30, 1619, they had thus broken ground for the foundation of the present democratic form of government in the United States.

This year (in 1920) these events are being commemorated in the United States, in England and in Holland. In August, the origin of the Pilgrim movement will be celebrated in England. And early in September, meetings will be held in Holland in memory of the Pilgrims' sojourn in that country.

In September, a "*second Mayflower*" will set sail from Southampton, England, to follow to the American shore the path taken by the original Mayflower. (But this second Mayflower will be modern, and therefore much more seaworthy than her smaller predecessor.)

This boat, carrying many prominent people of England, Holland and the United States, will anchor in Provincetown Harbor in late September. Its arrival will perhaps mark the crowning dramatic episode of the entire Tercentenary celebrations.

These events will not be celebrated in the United States by the citizens of Massachusetts and Virginia alone. Nor solely by the New England and South Atlantic States. Communities thruout America are planning to take this opportunity to review the "foundation upon which the United States rests," and to re-emphasize those principles which these ancestors established—and which their sons, their followers, and their followers' sons have handed down to us through our form of representative government.

America is appropriating, from national and state treasuries, hundreds of thousands of dollars to be used in plans for the commemoration. One plan is to erect, overlooking Plymouth harbor, a colossal statue of Massasoit, the Indian chief who befriended the Puritan pioneer. Another is to set the Plymouth Rock, which in 1741 was raised above the tide, in its original position.

Seventy American cities, including New York, Chicago and Boston, have started plans for their celebrations of the Tercentenary. The Sulgrave Institution and the American Mayflower Council have been active in co-ordinating these plans.

(Community Service (Incorporated), 1 Madison Avenue, New York, has drawn up suggestions for the use of communities planning to celebrate. These have been distributed for the use of schools, churches, clubs and general community groups thruout the United States and her territories. By writing to Community Service at the above address, individuals can secure valuable information and counsel regarding suitable plays, pageants, tableaux, recitations, ceremonials and music suitable for use in their communities.—Ed.)

"Whosoever can make two ears of corn, two blades of grass to grow upon a spot of ground where only one grew before," says Swift, "would deserve better of mankind and do more essential service to his country than the whole race of politicians put together."

——o——

"A vicious sow makes better pork and lard than she does a brood sow."

THE CAMPUS ECHO

H. W. Harshfield, Editor.

AN HUB DEPARTMENT HAS NEW HEAD

Prof. Charles S. Plumb resigned as the head of the animal husbandry department to take up research work at the University. Prof. Carl W. Gay, formerly at the Uuniversity of Minnesota, has been appointed to the position held by Professor Plumb.

Prof. Gay is known to Ohio Stockmen since he served at the University from 1905 to 1907 as an assistant and associate professor. On several occasions he has judged stock at the Ohio State Fair. Prof. Gay has had experience at Iowa State College, the University of Pennsylvania, the University of Minnesota and with agricultural boards in Pennsylvania.

He holds the degree of doctor of veterinary medicine from Cornell and of bachelor of science in agriculture from Iowa State College. He is the author of "Principles and Judging Livestock," "Productive Horse Husbandry," and "The Breeds of Livestock."

——o s u——

TOWNSEND AGR. SOCIETY SET FOR THE NEW YEAR

Beginning the year with a new corps of officers, Townshend Ag has before it a task even greater than that of the preceding year. The officers chosen to guide the society for the first semester are: Vance Clever, Ag-4, president; Hiram W. Harshfield, Ag-3, vice-president; Neal A. McCoy, Ag-4, secretary; Ray S. Spilker, Ag-3, treasurer; Clarence F. Moses, Ag-3, censor; B. Parker Hess, Ag-3, critic; Ross F. Miller, Ag-3, bill poster; Orman R. Keyser, Ag-4, musical director; and Virgil M. May, Ag-3, sergeant-at-arms. C. Victor Kendall, Ag-4; Everett B. Barker, Ag-4, and Lynn W. Finley, Ag-4, will comprise the executive committee for the same period.

The society plans to start the ball rolling with an open meeting at the beginning of the school year where every one may get acquainted. Besides being a literary society Townshend Ag desires to be a social organization. C. Victor Kendall will represent the society on the semi-centennial committee.

——o s u——

AG PROFS DON OVERALLS AND PLAY BALL

The professors of the soil department had an unusual attack of the base ball fever this spring. The first attack cumulated in a challege to the An Hub department for a game and later to the Rural Ec department. The germ didn't take with either of these departments and so the chances of a ball game looked rather slim. Then the relapse came with a challenge to the rest of the Agricultural College. The challenge was accepted and a game was set for May 31. In the meantime the batteries were toughened to a perfection. The line-up for the victorious soilers was:

Sheperd, c; Dowdy, p; Thrash, 1b; McClure, 2b; Bachtell, 3b; Dustman, ss; Bear, rf; Lyman, lf; B. Barnes, cf; Conrey, cf.

The Profs who had to gallantly take defeat were:

Kays, 1b; Taber, 2b; Crane, ss; An-

derson, rf; Stoltz, cf; Bothwell, lf; Hughes, v; Arnold, c; Carter, Hime, Steward.

The victors made their big drive in the first two innings, but the blow they had delivered was too much to be taken in one game. Dean Vivian must be complimented on the way he umpired the game without allowing a fight. He was looking for a piece of gas pipe before the game but he must have found a 45 as he carried his hand on his hip pocket throughout the game.

——o s u——

HORSE SHOW A SUCCESS

The Saddle and Sirloin Club, in connection with the Columbus Riding Club, gave its annual horse show on the afternoon and evening of May 29 at the Fair Grounds.

The entry list was offered to 21 different classes including various gaited saddlers, for women, men and officers, polo mounts, hunters, jumpers, roadsters, drafters, single and in pairs, and ponies. The department of animal husbandry captured the greater part of premiums in the draft classes in which it made 15 entries.

The Saddle and Sirloin Club was represented by Professor Donald J. Kays and Donald C. Drake Ag-4. Silver cups were given for first prizes and ribbons for second and third. Special features in the way of stunts and trick riding were given in connection with the show.

——o s u——

O. S. U. can well afford to celebrate its 50th anniversary this fall. Fifty years of service have passed but it is hoped that it is only the beginning of the service that she is to render to the world.

——o s u——

Dr. Charles E. Thorne, director of the Ohio Experiment Station, is spending the summer in Europe where he is observing the agricultural conditions.

BACK TO THE FARM MOVEMENT

New Orleans States: It appears that the main trouble with the back to the farm movement is the great earnestness its leaders display in wanting the other fellows to go back.

Houston Post: "Everybody is interested in the 'Back to the Farm' movement," says a contemporary. They seem to be—at least they seem to have their backs to the farm."

Did you ever think that all of the men in any one profession except farming could stop producing for one year without causing a calamity? Possibly when food gets scarce enough in the cities to make stomach and backbone meet, there will be an "about-face" which will start the back to the farm movement.

——o s u——

AG STUDENTS ARE DEAD SHOTS

When it came time for the military department to choose their rifle teams it discovered its best shots among the farmer boys who had received their training while hunting squirrels and rabbits. The O. S. U. won every match in which it took part. The student taking part in the match with De Pauw University were Clifford R. Cutright Ag-2, Ralph Beerbower Ag-2, Walter W. Smith Ag-2, Humphrey Keever Ag-1, Edward H. Windle and Frank H. Fetterman.

——o s u——

A man can have about as much pride when digging potatoes as the early gold diggers in California.

——o s u——

Ohio State Cadets will again come out in the old-time blue suits instead of the khaki uniforms. Under the present arrangements the students will pay $20 on the uniform and the government will pay the balance.

(Continued on page 44)

FARM CROPS

H. G. DOSTER, Editor; ROBERT MAYNE, Assistant.

SEEDING RAPE IN CORN

With tankage around one hundred dollars per ton, is it not worth while to think of tankage substitutes? Rape comes as a rescuer to help us out of this critical situation. Rape seeded in corn at the rate of five pounds per acre, furnishes enough protein so that only a very little of tankage is necessary when pigs are turned into the corn. In Iowa experiments, rape seeded with corn has increased the pork producing power of an acre from 100 to 200 pounds. With rape seed costing 14 or 15 cents per pound and the cost of seeding it in the corn amounting to a $1 per acre, it is not an expensive proposition to grow rape as a supplement to tankage. The fertilizer value of rape is almost enough to pay this charge and if there are any hogs or sheep to be turned in on the corn the expense of rape seeding will be repaid many times.

LIMESTONE DEPOSITS VALUABLE FOR FARMERS

The farmers may profitably use local beds of limestone rock as pointed out by the department of chemistry at the Ohio Experiment Station.

This department for the past few years has been testing the value of limestone from practically all parts of the state and finds that many deposits are valuable for agricultural purposes.

In some sections there are beds of marl that may be easily used for liming the land and in other places the limestone may be ground with portable home outfits.

The use of lime has been found profitable on practically all soils of eastern Ohio; it is sometimes deficient in the western part of Ohio often where the soil is underlaid with beds of limestone rock.

Long years of cropping have removed quantities of limestone from the soil even in this region, so that it is necessary to lime the land to secure the largest profit from farm crops.

HOW ABOUT NEXT YEAR'S CORN CROP?

The Year Book, put out by the United States Department of Agriculture, shows that the average yield of corn per acre in Ohio for 1918 was only 36 bushels. Most farmers believe that this yield can be materially increased. Then with the present price of corn around a dollar and a half a bushel, is it not a paying proposition to get as many bushels of corn per acre as we can, provided we do not impoverish the soil by so doing?

It is a well known fact among most up-to-date farmers that unless good seed is used a good corn crop can not be expected. If seed is planted that has poor germinating power, we can not expect to get healthy plants and unless we do have plants that are strong and vigorous, we are not going to get very far in increasing the yield.

Autumn is the time to prepare for a big corn crop the next season. It is always advisable to get your seed from your own fields or in your immediate neighborhood. Plenty of time should be taken to select the seed and one should always select enough because, if more is selected than is needed, the remainder can readily be disposed of as there is always a demand for good seed corn.

Field selection has long been recognized as the best method of obtaining

seed corn or in fact, any kind of seed. It enables one to observe the conditions under which the plants have been growing. If corn is selected from the crib there is no way of telling how the nice large ear, which one would naturally select, has grown. The plant that produced this large ear may have had the best of growing conditions, such as moisture, spacing, soil fertility, etc. Field selection makes it possible to select ears that have been produced under competition. In general, field selection makes it possible to get seed that has been produced by plants that are capable of producing more than one ear, plants that have the desired amount of foliage and in fact, all the qualities that go to make up the type of corn plant wanted. Of course it is very seldom that all these desired characteristics can be found in one single corn plant, nevertheless, we have in mind an ideal which we should strive to attain.

Since fertile seed is the first requirement of a good corn crop, every effort should be put forth to gather plenty of the right type of well matured seed. It is not an exaggerated statement to say that if other conditions are right, that good fertile seed will assure an excellent crop. On the other hand other conditions might be ideal but, if the seed is poor, Ohio's corn crop will never be raised above thirty-six bushels per acre.

("How to Select Seed Corn" will appear in the next issue.)

BURN FENCE ROWS TO DESTROY CHINCH BUGS

Late fall and early winter, according to the department of entomology at the Ohio Experiment Station, is a good time to destroy hibernating chinch bugs. At this time of the year they hibernate in fence rows, wood piles, and dead grass. When these are burned many of the bugs are destroyed, so that the outbreak during the following summer is lessened.

A splendid way to accomplish this, is to get the farmers to cooperate and organize a burning program. In this way a large per cent of these insects will be destroyed that would otherwise pass safely thru the winter and produce large broods the following summer.

ROOT ROT

The clover disease known as root rot has been reported to the Department of Botany, Ohio Experiment Station, by H. L. Andrew, agricultural agent of Van Wert County. The disease was reported late last season and now appears to spread over a considerable area in west Ohio.

In sections where the root rot is prevalent, farmers are advised by plant pathologists to plow up the affected crop and put in corn or some other seasonal crop.

The root rot does its damage principally during periods from October to June, but of course reduces the yield of clover materially. The field appearance of root rot is a weakened condition of the plants, browning of the stalks in spots over the field and below the surface of the soil, the root is discolored and enlarged.

The best method of control known is to practice crop rotation as it is impossible to control the disease by treating the seed. Alsike and sweet clover have been found to be resistant to root rot.

—o—

JUST NOW

She: "Don't you think that a man who keeps on drinking is disgusting?"

He: "No; I think he's wonderful."

—*Watch on Rhine.*

HOME ECONOMICS

DAISY CLOE CUNNINGHAM, Editor.

NUTRITION CLASSES FOR CHILDREN

A New Field in Home Economics

The most practical way of overcoming malnutrition in children is to educate the children themselves. At present the most popular way to do this is through nutrition classes. The first nutrition classes were conducted by physicians but now there is a demand for nutrition specialists to conduct classes and to work in cooperation with the physicians and nurses, taking as their special problem the instruction of the children and their mothers in food and food habits.

This field of work has unusual possibilities for Home Economics graduates and students. Since the work is still experimental we need people with vision and initative to develop the methods for handling nutrition classes in such a way as to make them a real contribution to a constructive child health program.

The school is the logical place for these classes. The results of those already established prove their value and importance in relation to the regular school work of the child—healthy children, better work. To make the work effective we must interest the principals and teachers in the scheme. The instruction must be adapted to the different school grades, but we want to begin with even the youngest children and make them understand that they must drink so many cups of milk a day and eat certain nourishing foods if they are to do good school work and be strong and happy; also that these everyday habits are just as important and more so as getting to school on time or learning that two and two make four. Older children should also know what their normal weight is and that losing weight means decreasing ability to work and to play, and less power to resist sickness. We want every school child to appreciate the relation of food and good living to health, and the relation of health to life and efficiency. Isn't this new field a challenge to the best of our students? MARY A. HARPER.

HOW TO PRESERVE THE MARKET BASKET

A good willow market basket could be bought a few years ago for a dollar. We all know what a niee one costs now. It pays to keep the old basket in good condition as long as possible.

It will help to do this by applying a coat of satin finish, obtainable at any paint store. This makes it weather proof.

PAINT PROLONGS LIFE

The varnish on carpet sweepers soon wears off: Unprotected as it then is from moisture and variations in temperature, it is likely to fall to pieces. This can easily be prevented by applying a coat of satin finish, obtainable at any paint store whenever the machine shows the need of it.

Washing machines should also be protected from variations of temperature and moisture. When the original finish shows signs of wear apply a coat of colored enamel.

A little attention to these details on

the part of housewives will prolong the life of utensils or utilities which cost considerable money to replace nowadays.

BREAD AND CAKE BOXES

Nearly every farmer's wife owns a japanned bread box and cake box. They are usually brown with gilt lettering. There was a time when this tinware didn't cost much money. If a box rusted out it was carelessly tossed on the rubbish pile and a new one purchased. But price one of these boxes now! You will think twice before you discard it.

And really it isn't at all necessary to let it get into a condition that will suggest discarding it. If the jappanning shows signs of wear go to the store and buy a small can of colored enamel. Clean the surface of the box and apply a thin coat of the enamel with an ordinary varnish brush. The rust will immediately be checked. That will be much cheaper than a new bread or cake box.

THE WINTER'S SUPPLY OF VEGETABLES

Vegetables should have the same place in the diet in the winter as in the summer. During the winter months a vegetable served with our meals give variety to the menu. Vegetables are high in mineral salts, and are one of the important sources of the ash constituent of our foods. They also give bulk to our diet.

The principal ways of preserving vegetables are, canning, drying and pickling. The vegetables used in any of the above methods of keeping should be as fresh as possible. Do not pick them and allow them to set around a day or two before using. The vegetables when not used fresh and allowed to set around will wither, and one cannot get as much out of a bushel as they would otherwise. Some will spoil and cannot be used. And an old product does not keep so well as a fresh one.

Canning retains the original form, color, flavor and texture of the vegetable to a greater degree than does other means of preserving. The best method of canning vegetables is by the one period cold pack method. When vegetables are canned this way they are just as plump and solid as when they were taken from the plants.

When canning vegetables the same as canning fruit, one should see that the cans are clean, and tested to see if they leak. It is well to test the rubbers also. After the jars are tested they should be put into water until ready for use.

The hot water bath can be prepared first, so that the water is boiling when the jars are ready to be lowered into the water. This saves time. There are various vessels that can be used for the hot water bath or processor as it is sometimes called. A water bucket, lard can, wash boilers, can be used if one does not have a commercial outfit. A false bottom should be provided, because the jars will break if set right on the bottom of the processor. This bottom can be a wire stand, or made of wood, or a commercial rack for holding jars.

After this is done the vegetables can be prepared. All vegetables with the exception of sweet green pepper should be blanched. The peppers are baked in the oven until the skin is loosened. Blanching is done to reduce the product in bulk, and more can be put in the jars. It is well to economize in canning as in other household duties. Blanching also removes the strong flavor from vegetables.

(Continued on page 50)

SOILS

C. F. MOSES, Editor; W. E. KEYSER, Assistant.

FERTILIZER SALESMEN MEET

One hundred and twenty-five representatives of the middle west fertilizer companies held a meeting at the University and at the Experiment Station the week of June 7. Each member of the Soils department took part in the meeting.

The school was held to familiarize fertilizer salesmen with experimental evidence available on fertilizers and to explain the reasons for fertilizer recommendations which the College of Agriculture and the Experiment Station make to the farmers of Ohio. It helped to eliminate much of the misunderstanding which arises between these institutions and the dealers. Each is informed of the problems which confront the other in the establishment of correct fertility practices.

SCHOOLS FOR FERTILIZER AGENTS

A series of fertility meetings were held in Clermont county for local fertilizer agents and dealers. A fertility school for cooperative elevator managers and fertilizer agents was held in Auglaize county. Good feeling was evident in the meetings, and progress was made toward the elimination of low grade fertilizers, and the use of more acid phosphate and high grade goods.

Mr. Dustman is fostering this movement. These agents are part of their communities and they have a duty to induce their constituents to use a quantity and quality of fertilizer suited to their conditions. Other communities have asked for similar meetings.

PERMANENT SOILS DEMONSTRATIONS

Mr. Bachtell has 30 permanent soils demonstration farms in northeastern Ohio. Mr. Barnes has three in Lawrence county, with more being organized in Scioto, Gallia, Hocking, Monroe and Fulton counties, representing demonstrations in pastures, rotations, and orchards. Samples of the soil are taken. Mr. Dustman has thirteen soils demonstration farms in southwestern Ohio—most of them being conducted in cooperation with the department of Farm Management.

ACTIVE INTEREST IN LIMESTONE

Interest in limestone continues to grow. At Somerset, in Perry county, a stock company was formed for the purpose of building bins along the railway for the storage of ground limestone. This project was carried out with the cooperation of the Rural Economics and Agricultural Engineering departments.

Mr. Barnes also encourages local organizations for crushing lime where the community is too far from the railway to make hauling profitable. In Monroe county, Mr. Conrey traced the ledges of limestone most suitable for crushing and helped the farmers to locate crushers to the best advantage.

Mr. Bachtell reports considerable interest in limestone storage in Lake, Geauga, Knox and Wyandotte counties. Storage facilities have been built in Perry and Lake counties. Three other storage projects are planned. In Knox county six elevators keep lime, as do dealers in several other counties.

Erie and Huron counties cooperated in a "Limestone Day." Over 100 soils were tested for acidity, and lime spreaders were demonstrated.

EXTENSION WORK

During the year 1000 letters of inquiry in regard to soils have been answered. Meetings and conferences with county agents have been held. And exhibits have been made at the State Fair, Farmers' Week, and at the International Hay and Grain Show.

Mr. Valley, the extension chemist, made 279 tests for soil acidity; determined neutralizing power of 270 limestone samples; tested many soils for nitrogen, phosphorus, potassium, calcium, magnesium, and made many other determinations.

A four page monthly publication, "Timely Soil Topics" presents the views of the department to the farmers on various topics of timely interest.

ARTICLES BY MEMBERS OF SOILS DEPARTMENT

During the year several important articles have been written by members of the Soils department. Soils Science for January contained an article on "Sampling Soil Plots," by Professor Bear and Mr. McClure. The Ohio Farmer published articles by Professor Bear. Other articles were published by the Ohio Experiment Monthly, the Agricultural Student, West Virginia Agriculturist, and Fertilizer Green Book.

SOILS DEPARTMENT BUSY

During the year 426 students carried work in the Soils department. Four men did work for their master degree, and three men were working toward Ph. D. degree.

FERTILIZING GRASS LAND

By W. E. KEYSER, '21.

GRASS occupies a greater area than any other crop in America, and due to this fact it is the most neglected. For convenience, grasses may be divided into two groups; namely, (a) hay and forage, (b) pasture. Very little attention is given to the maintenance of pastures and very little more to that of meadows. Land that is not convenient to till is given over to pasture and meadows are usually considered as the tail end of any rotation. Under these conditions neither receive a very large amount of manure or any other fertilization.

Pasture will respond to a very little attention which it seldom receives until the grass has been completely overrun by worthless weeds. On moderately sweet soils applications of acid phostate alone without seeding has made a wonderful improvement in the white clover or blue grass. To improve the soil with fertilizer and lime assures the headway of useful plants.

Many farmers think that the stock manure is the ideal fertilizer. However, this has its limitations as it has been illustrated by experiment where manure and acid phosphate were used in top-dressing a limestone pasture. The stock particularly avoided the manure dressed side of the field while on the phosphate dressed side of the field the foliage had a better color and the line between the treated and untreated parts

(Continued on page 54)

VOCATIONAL AGRICULTURE

BOYS' AND GIRLS' CLUB WORK, ETC.

E. B. BARKER, Editor; J. A. MALICK, Assistant.

INSTRUCTION

Nine boys of the Hocking County Shorthorn Calf Club spent Tuesday, August 11th, at Ohio State University looking over the live stock and points of interest. Prof. C. T. Conklin gave the boys instruction in points to look for in judging live stock. M. V. Bailey, county agent, and Mr. Brasheares, county superintendent, accompanied the boys on the trip.

PICNIC

Much interest was manifested by the boys and girls and their parents who attended the Muskingum County Picnic held at the fair grounds, Zanesville, Saturday, August 7th. Mr. Palmer, state leader, and Miss Horst, assistant state leader, were present to greet the club members. After a picnic lunch a program of events and contests was carried out. Each club had one or more representatives in each event and banners were given to the clubs winning the most points.

A fine club spirit prevailed during the day as demonstrated by the yells and songs of the various clubs and the sportsmanship like manner during the contests. County Leader Brady and his committee were responsible for the splendid event.

One hundred and fifty club charters are being mailed out this month to all clubs that have met the requirements of a club of at least five working on the same project with a local leader in charge, a local club organization and a definite club year program of work. Charters are also being mailed to clubs for 1919 as the charters were not available last year.

The Crawford County Club Picnic which is planned for Aug. 21st, promises to be a big event in the club year program of work in that county. County Leader Allgyer with his committee has worked out a program of events that will give every club member a chance to make his best better.

PLANS

Summit county is planning a ten days' camp for the boys in Club work. The camp will be be held on Rocky river under the direction of Rev. Eastman and County Leader R. B. Tom. At the close of the camp on August 24th, the girls who are club members will go into camp at the same place for a week under the direction of Miss Bigelow, a daughter of the Clothing Club leader at West Richfield.

R. C. Smith, a graduate of the University of Illinois, was recently appointed Club Leader for Wood county.

Borish Ollar, a thirteen year old girl, Hungarian by birth, who won third in the State Food Club Work last year, is captain of the Erie County Canning team that will demonstrate at the State Fair 1920.

In Tuscarawas county twenty-one Holsteins and five Jersey calves were distributed on the day of the County

Club picnic, June 19, 1920. County Leader Edith Hutchison, County Supt. Barthelmeh and County Agent Boltz were instrumental in starting the Dairy Calf Club.

EQUAL TO THE EMERGENCY

Collection money was to little Tommy one of the essentials of church going. Every Sunday morning he saw that his penny was ready. One day, just as the ushers began to take the collection, Tommy noticed that a guest in the family pew was not duly provided. Sliding along the seat, he whispered:

"Where's your penny?"

"I didn't bring one," replied the lady.

Time was short and the matter was urgent, but Tommy was quick-witted. Thrusting his penny into the lady's hand, he whispered:

"Here, take mine! It'll pay for you and I'll get under the seat!"—*Buffalo Commercial.*

SMITH-HUGHES AGRICULTURAL TEACHER

By THOS. E. BERRY.

WHAT does a Smith-Hughes agricultural teacher do? This is a question which is being asked in many communites. It is a good question and merits a good answer.

The Smith-Hughes teacher does three classes of work. He teaches vocational agriculture to farm boys in the High school where he is located, supervises agricultural work the boys are doing at their homes, and engages in community work.

The first of his duties occupies two double periods each day. Lessons are assigned similar to those in any class in High school. The students prepare the assignments and recite the next day. The recitation is often varied by having some one visit the class, who has been successful in some farm enterprise, and give the boys the benefit of his experience.

The motive for study in a Smith-Hughes school is different from that in many classes in High school, for the students get their lessons because they want to. They realize that even though they may not all become farmers, a knowledge of agriculture will be of great value in any walk of life.

The class work is not all confined to the class room. Much of the instruction is given in the field, where the boys have an opportunity to see the results of an approved method, and to discover many truths first hand.

It is the aim of the instructor to make all of the work very practical and of immediate value to the farm boy.

In addition to his duties in the class room, the Smith-Hughes teacher supervises farm enterprises, or home projects, as they are called at the home of the boys. It is the purpose of this work to give each boy an opportunity to see what an approved method will do when put into practice, and to give him a demonstration of the margin of profit that it is possible to make in farming. The instructor spends about one fourth of his time at this work. If his classes are large and scattered over a large field it may require more than this much time.

The third thing the Smith-Hughes teacher does is what is known as community work. He is expected to "Boost" whatever will be of value to the community in developing its agri-

(Continued on page 56)

THE DAIRY

J. E. FREW, Editor; C. W. KNOWLES, Assistant.

DEHORNING CALVES

The Other Side of the Question

There are two sides to nearly all questions, and in a conversation with Ivan Steiner a few months ago, he pointed out an angle to the matter of killing calves' horns with caustic potash which is not usually considered. No doubt the old practice of dehorning cattle, in which the cow was securely tied in a rack and the horns sawed off in spite of struggling and bellowing, was barbarous, and no one will advocate its return. However, the modern method by which the horn is removed by a single snip of the shears, can hardly be regarded as causing undue pain; and here are Mr. Steiner's arguments for this method.

When the horns are killed on a calf, a rather peaked, hard, bony poll develops and as the cow matures she learns to use it rather freely on other cattle. A severe bruise may be inflicted, and as in the case of pregnant stock, considerable damage may be done. On the other hand, the horns are allowed to develop normally and then removed when the animal shows a tendency to use them, the loss is keenly felt and the cow will show much less pugnacious spirit than where the horns are not allowed to develop. In addition a better shaped poll is secured.

Incidentally, it might be mentioned that Mr. Steiner, who graduated from the College of Agriculture in 1908, is making his own way on a medium sized farm near Smithville, Ohio. The "assets" in which he takes the most interest are an interested and capable wife and two splendid, wide-awake children who already take an interest in the work. One cow of his breeding has gone to Kentucky State College to found a herd there, and another brought $2000, next to top price, at the Guernsey consignment sale at the fair grounds last June. While he milks only three to five cows, he has them tested for A. R. and finds that it pays

VANCE CLEVER.

FIFTEEN TEAMS ENTERED

For Junior Cattle Judging Contests, National Dairy Show.

As the closing day for entries for State teams of boys and girls for Junior Judging Contest rolls around, entries from fifteen states are filed with show management, and three or four other states are asking for a few days grace as they need more time to make arrangements to send a team before making entry.

Teams are entered so far from the following states: Delaware, Idaho, Illinois, Indiana, Iowa, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Ohio, Pennsylvania and South Dakota.

The Dairy Show management has made hotel reservations for forty-five boys and girls who will be guests of the show, at the Y. M. C. A. hotel and the Y. W. C. A. hotel, respectively, and if any of the parents or friends of the boys or girls are coming along, reservations can be made for them. These hotels are as comfortable as any in town, so far as comfort goes, and some of the luxuries may be found at both.

They are both scrupulously clean, central of location, and handy for elevated and surface cars to the show buildings. The boys and girls will be looked after in every respect.

The National Dairy Show is the leading agricultural and industrial Fair in America, and is filled with everything a dairyman should be kept in constant touch with.

The boys and girls fortunate enough to be sent to this show's contests will derive a benefit that will be life-lasting, and will get inspiration that will be bound to have an influence in the shaping of a successful career.

The men of vision in the several states who are making it possible that these boys and girls can participate in this wonderful event in their young lives, and the parents and the relatives of the children can all well afford to come to the show to see just what the whole show means to the dairy industry, and perhaps get as much out of it as the young people.

The show dates are October 7th to 16th, and the big day for the boys and girls is Friday, October 8th. Sunday, October 10th, they will see some of Chicago's big industries, and hear men of national standing speak on religious and agricultural topics.

MAKING BUTTER ON THE FARM

The farm-made butter of today, instead of being shipped to the large markets, is consumed very largely at home and in the near-by towns. Although creamery butter has almost entirely supplanted dairy butter more than half the butter in this country is made on the farm.

The art of making butter on the farm begins with the production of good, clean flavored cream. To obtain practically all the cream from the milk and have it in the best condition requires the use of a cream separator. The barrel churn is one of the most convenient types of churns, because it gives thorough agitation without the use of inside fixtures. Always use a thermometer to determine temperatures.

Much of the butter that it made on the farm today has a weak body, poor keeping qualities and becomes rancid quickly. This is due chiefly to improper care of the cream before churning, temperature too high or too low and allowing too much buttermik to remain in the butter because of improper working.

Observation of the following steps in making butter on the farm should produce a product of excellent quality:

1. Cool the cream immediately after it comes from the separator to a temperature of from 65 to 75 degrees F. until mildly sour. Clean and sterilize all utensils.

2. Cool the cream to churning temperature or below, and hold at that temperature for at least two hours before churning. This temperature should be one which makes the butter granules firm without being hard, usually 52 to 54 degrees F. in summer and 58 to 60 degrees F. in winter.

3. Clean and scald the churn, then half fill it with cold water and revolve until churn is thoroughly cooled, after which empty the water.

4. Weigh the cream and pour into the churn through a strainer.

5. Add butter color, from 20 to 35 drops to a gallon of cream.

6. Churn until the butter granules are formed the size of grains of wheat. Care must be taken at this stage not to overchurn.

7. Draw off the buttermilk through

(Continued on page 58)

FARM MANAGEMENT

RURAL LIFE, ETC.

B. P. HESS, Editor.

FATHERHOOD—A PROFESSION

We hear a great deal of the sanctity of motherhood and of the sacred responsibilities of the mother; but who talks about the nobility of fatherhood and the wonderful privilege of being a father? One would almost suppose that children had but one parent, or that, beyond the obligation of support, a father owed nothing to his children.

As a matter of fact, just what does he owe them?

In the first place, he owes them the best possible inheritance of health and natural strength. If the fathers of the present generation had been taught, as schoolboys, that they owed their children a heritage of physical health, the present generation of children would be a far healthier, happier lot of youngsters.

And having given his children a healthy heritage, the father should share with the mother the oversight of their children's well-being. I know —as everyone else does—hosts of fathers who not only fail to take any responsibility about the childrens' habits, but who actually, though unconsciously, work against the mother by giving surreptitious candy, by keeping the children up late to play with them and thus make her work with them more difficult. The result is that Father is very popular, while Mother is considered "awfully fussy."

On the mental side, a child, as he grows older, looks more and more to his father. Wise is the father who takes an active interest in current events or allies himself on the side of local civic improvement, for through his example his children naturally acquire a love of good citizenship.

And on the moral and religious life, how often is Father a mere figurehead in his own family. Usually it is Mother who represents the moral law, or, if Father does take a hand, it is merly as the executor of her decreed punishment. "Wait till your Father comes home!" is either an empty threat, or, in rarer cases, a phrase filled with terror for the small rebel.

Too often church attendance is left entirely to the women. The children see Mother start off alone for church, while Father remains at home to read his paper. The notion that church is a woman's affair is formed so naturally that, later in life, it seems an instinct.

How much children miss, how much fathers miss, by this one-sided parenthood! Happy the boy who looks up to his father as an ideal of bodily vigor, wisdom and goodness. And this does not mean that Father must stand on a pedestal. Far from it! Anyone who has read the charming letters of Theodore Roosevelt to his children sees, as in a mirror, the picture of a father utterly devoted to his children, and utterly adored in turn. Whether he is leaping from haymow to haymow in a wild game of tag, or reading aloud with his children gathered around him, he is always their chosen companion, their best friend, their greatest hero. And there are many devoted fathers! Francis E. Leupp gives us a charming picture of one in this little book, "A Day with Father."

Reversing a well-known quotation, we may say, "Happy is the father who knows his own child!" Happy because there is no more delightful study than that of the development of a child, as he progresses from infancy, through childhod to youth. Happy because of the inspiration that comes from the companionship of children. Happiest of all because, in the trying times of their youth and early maturity, he will be able to understand his children. He can guide and counsel them, instead of standing helplessly by—an outsider. If only American fathers would know their children, they would find them more interesting than any business in the world, and as for the children, who can measure their gain?—*Indiana Farmer's Guide.*

"FARM BUREAU"

Tune—"Old Black Joe."

Gone are the days when my farm returned no pay,
Gone are the folks who used to call me Jay,
Gone are my debts for the better crops I grow,
I hear by neighbors' voices calling "Farm Bureau."

CHORUS.

I'm coming, I'm coming, for my bank is full of dough,
I hear my neighbors' voices calling "Farm Bureau."

Why do I reap where once no grain would grow?
Why do I ride where I once on foot did go?
Tooting my horn with pleasure here below,
I hear my neighbors' voices calling "Farm Bureau."

Here is my wife, now so happy and so free,
The children so dear that I hold upon my knee,
Friends by the score, where e'er I choose to go,
I hear my neighbors' voices calling "Farm Bureau."

—*From Monroe (Ill.) County Bureau Circular.*

"WHAT DOES THE FARM BUREAU MEAN TO YOU?"

By JOHN F. DOWLER.

(Mr. Dowler has had experience in the organization of Farm Bureaus and is thus well equipped to handle an article on this subject.)

"THE farmers never did stick together and I don't think they ever will," replied a 200 acre farmer when solicited to join the Farm Bureau. He had been a member of several minor farm organizations which in turn had failed. That his convictions were founded upon observations and experience.

If all the farmers were of the same opinion there would be little hope for the future of agriculture. The farmers themselves now realize that they are the last group of men to organize their business. And it is of necessity that they organize to compete with other businesses on the same scale.

Agriculture represents 51% of all business, and had heretofore no complete organization for its protection and advancement. The Farm Bureau

(Continued on page 58)

OF
OHIO STATE UNIVERSITY
A Medium for Exchange of Ideas Between College and Farm

EDITORIALS.

PROGRESS

Twenty-six years ago C. W. Burkett, '95, and J. F. Cunningham, '97, "launched" THE AGRICULTURAL STUDENT, a twelve page paper upon the then unfamiliar sea of journalism. Today both are known thruout the agricultural world as Editors of two of the leading farm papers. Today their "frail bark" has grown to a sixty-four page paper, fostering those ideals which make for the higher plane of rural citizenship. It is with this in mind continuously that THE AGRICULTURAL STUDENT has been able to place itself as one of the leading agricultural publications in the U. S.

However, more growth is possible. A great future lies before us. Neither one man nor the whole immediate staff is able to "carry on" without the cooperation of all, both students, and alumna as well as all of our other worthy subscribers. Send in your criticism, suggestions, questions, knocks, compliments and contributions. This is your paper, why not avail yourself of the opportunity to get acquainted? Let us hear from all of you!

———x———

SEMI-CENTENNIAL

On October 13, 14 and 15, Ohio State University will hold the largest celebration ever held in the history of the institution. This is your celebration, your opportunity to meet old acquaintances, to see old friends and to form new ones, and to become imbued with the present spirit of your old alma mater. Every Ag. man should be there. All are welcome and in fact expected. Remember no matter whether you are successful or not there will be the same warm welcome for you. Just drop into our office and see. We are still in the Ohio Union.

———x———

POLITICS

Agriculture is taking its place in politics as it should have years ago. It is meet that it should. Some organizations still shy at their responsibilities in keeping the U. S. a democracy. To be non-political is to be essentially

a shirker. For agriculture not to take an active place in the affairs of government is gradually passing with the old era. Is not certain planks placed in the two political platforms proof of this? Here is the Republican plank:

"The farmer is the backbone of the nation. National greatness and economic independence demand a population distributed between industry and the farm, and sharing on equal terms the prosperity which is wholly dependent on the efforts of both. Neither can prosper at the expense of the other without inviting joint disaster.

"The Republican party believes that this condition can be improved by practical and adequate farm representation in the appointment of governmental officials and commissions; the right to form cooperative associations for marketing their products, and protection against discrimination; the scientific study of agricultural prices and farm production costs at home and abroad, with a view to reducing the frequency of abnormal fluctuations; the uncensored publication of such reports; the authorization of associations for the extension of personal credit; a national inquiry on the coordination of rail, water and motor transportation with adequate facilities for receiving, handling and marketing food; the encouragement of our export trade; an end to unnecessary price fixing and ill-considered efforts arbitrarily to reduce prices of farm products which invariably result to the disadvantage both of producer and consumer; and the encouragement of the production and importation of fertilizing material and of its extensive use.

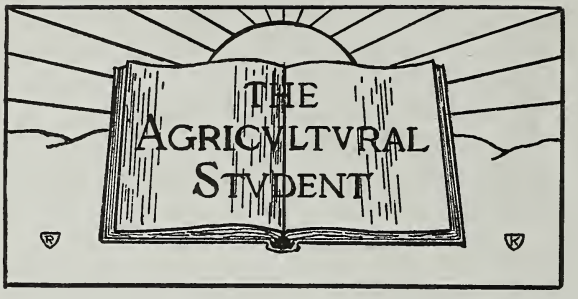
"The federal farm loan act should be so adminstered as to facilitate the acquisition of farm land by those desiring to become owners and proprietors and thus minimize the evils of farm tenantry, and to furnish such long time credits as farmers may need to finance adequately their larger and long time production operations."

And here is the affirmative plank of the Democratic platform:

"We pledge prompt and consistent support of sound and effective measures to sustain, amplify and perfect the rural statutes and thus to check and reduce the growth and course of farm tenancy. We favor such legislation as will confirm to the primary producers of the nation the right of collective bargaining and the right of cooperative handling and marketing of the products of the workshop and the farm, and such legislation as will facilitate the exportation of our farm products. We favor comprehensive studies of farm production costs and the uncensored publication of facts found in such studies. We favor the enactment of legislation for the supervision of the great interstate live stock markets."

It can be noted that no pledge is given in the latter relative to farmers having representation in the appointment of governmental officers and commissions, no promise is seen to put an end to price fixing and the unwarranted drives on prices of farm produce, no promise to protect the farmer from the importation of cheap farm products from other nations, and nothing is said relative to the violent fluctuations in farm prices and no hope is given toward a reform in the transportation of farm products.

However, we have the satisfaction of being keenly appreciated by both parties.



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ANIMAL HUSBANDRY

GEO. J. SCHMIDT, Editor.

POULTRY

There are three varieties of poultry —the egg breeds, the general purpose, and the meat breeds. To the first belong the Leghorn, Minorca, Ancona, and Andalusian; to the general purpose, the Plymouth Rock, Wyandotte, Orpington and Rhode Island Red; and to the meat breeds, the Langshan, Brahma, Cochin, and Cornish. In addition, there are a number of other breeds in each of these classes.

No one breed is a best breed except as it fits into the needs and surroundings of the owner.

The United States Department of Agriculture gives the following nine essential features for profitable poultry keeping:

Keep better poultry—standard-bred poultry increases production and improves the quality.

Select vigorous breeders—healthy, vigorous breeders produce fall and winter eggs.

Preserve eggs for home use—preserve when cheap for use when high in price.

Produce infertile eggs—they keep better. Fertile eggs are necessary for hatching only.

Cull the flocks—eliminate unprofitable producers and reduce the feed bill.

Keep a backyard flock—a small flock in the backyard will supply the family table.

Grow your poultry feed—home-grown feed insures an available and economical supply.

Eat more poultry and eggs—they are nutritious foods. C. V. K.

FORAGE

By providing good pasture crops for lambs after weaning and by using an annual pasture crop a set-back in growth may frequently be avoided and the lambs marketed at an early age, according to tests in lamb production at the Ohio Experiment Station. It is also found that the use of annual pasture crops either to replace or supplement permanent pastures frequently lessens the damage done by intestinal parasites.

Rape as a forage crop for sheep carried 22 lambs to the acre 183 days and produced 576 pounds of gain per acre. Rape is often used to supplement bluegrass pasture, which may become short during hot spells. When the gains to the acre are considered rape has given higher gains than clover, rye or bluegrass. Several tests show that an acre of rape pasture may produce from $40 to $50 worth of mutton when lambs are valued at $15 per hundred pounds.

More labor is required with annual forage crops than where permanent pastures are used, but it is pointed out that in sections of the state where land is relatively high in price the greater production per unit of land may be more than sufficient to offset the greater labor cost.

"Farmers can figure the feeding value of a good grade of white wheat middlings to be approximately 90 percent that of an equal weight of shelled corn," states Robison. "If middlings can be purchased cheaper than corn,

based on this percentage, the cost of pork production may be reduced, especially when the swine are given clover or rape pasture in addition to the middlings."

Practically all experiments in hog feeding at the Ohio Experiment Station point out the economy of pork production with the use of forage. Where clover cannot be used, rape may be provided as this crop grows easily and produces a large amount of forage to the acre.

HISTORY OF OHIO LIVE STOCK

By CLARENCE F. MOSES.

(Following is a comprehensive review of the whole history of Ohio livestock written as interesting information.)

A CENTURY and a quarter ago the thin stream of westward migration was beginning to trickle into the Buckeye state. This stream, growing in volume and velocity. swept a mighty civilization into the Ohio wilderness. First there were the isolated pioneers, then the primitive farm communities. And finally hamlets, villages, and cities sprang up and flourished. Along with the new people came their habits and customs, their tools and skill, their crops and live stock.

The pioneer family moved slowly westward behind the plodding oxen, perhaps the family cow trailed behind the lumbering wagon. Or an occasional adventurer gallantly bestrode his horse and sought the western paradise. And so the live stock of Ohio came in with the people quite naturally, first along the vague trails and later along the great National Road. Close upon the hunter came the first real settlers—the pioneer farmers. And farming without live stock was impossible.

The early horses of Ohio were heavy and slow. Lack of good roads made carriage horses of little value. Hence the ability to pull a load rather than speed or beauty was the measure of the value of a horse. The first horses were probably of Flemish origin. The Conestoga was a breed of rough draft horse brought from Pennsylvania by some of the early settlers. The Amish, Mennonites, and Dunkards introduced many horses of this type. The Norman horse was introduced into Stark county by the French settlers about 1828. Later these were crossed with the Conestoga and a new type resulted which was superior in style and action.

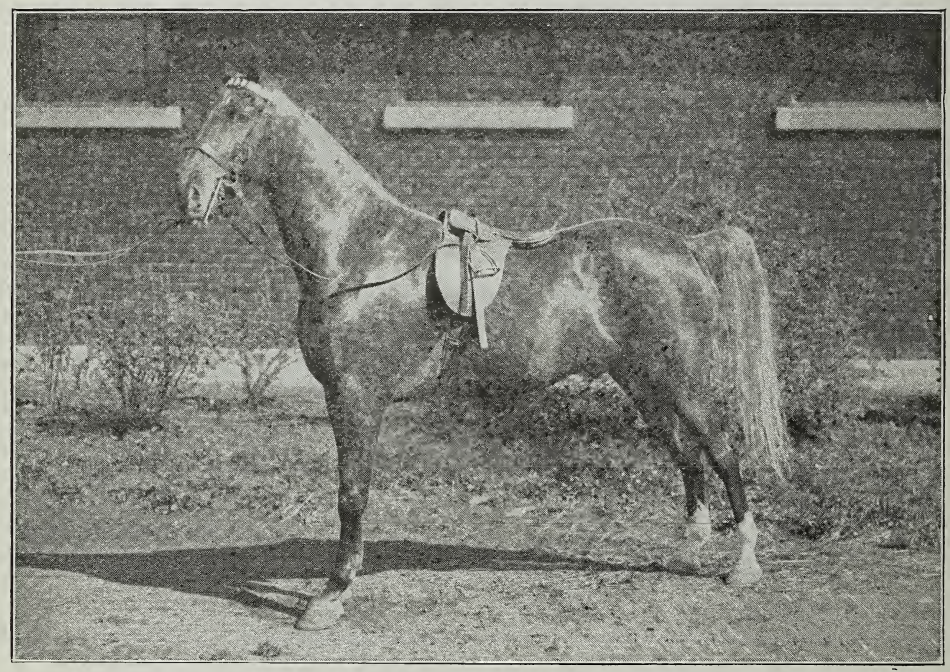
The first Bellfounder was brought from New York in 1840. John I. Van Meter of Pike county, purchased "Spread Eagle" in Virginia. The trotters were early introduced from Kentucky. Race courses were found in Cincinnati, Dayton and Chillicothe as early as 1825.

Between 1840 and 1850 there was a considerable increase in interest in the higher classes. Governor Trimble introduced "Eclipse" stock into Highland county. The style carriage horse was introduced into Warren county, "Cadmus," sire of "Pocahontas," being first. In 1847 the Lads of Steubenville brought "Morgan Tiger" from Vermont. This was the first of the famous Morgan line in Ohio. It is doubtful if any other breed has attained the enthusiastic popularity at one time accorded to the Morgans.

From the middle of the nineteenth century Ohio has shown a rapid increase in number and quality of horses. Many fine draft animals have been imported till now Ohio has some of the best Perch-

eron, Belgian and Clydesdale blood to be found in America. The heavy draft horse has come to haul the heavy loads in country and city, and to handle efficiently the machinery used on modern farms. Just what effect on this development the motor truck will have is not certain. The question is how far will the motor truck and tractor be able to replace the heavy draft horse.

The trotting horse, as well as the pacer, has made some remarkable speed



"CONNOISSEUR"

records during the past few years. And the sport of horse racing is still popular. But the automobile has seriously threatened the carriage horse. And the trotters that are "not quite fast enough to race" are a drug on the market.

The growth of the horse industry in Ohio is shown by the United States census. In 1840 there were 430,000 horses in Ohio. In 1910 there were 1,098,000. The increase has been fairly steady, slacking only as a result of the Civil War. During this period the Ohio horses have increased quite as much in quality as in number.

Oxen were the most important element in pioneer live stock. Oxen were usually the motive power used by the earliest pioneers in the journey to Ohio. They helped to collect the trees preparatory to burning or cabin building And once a patch was cleared the oxen were put to the plow and soon the pioneer had his corn growing, and the ever present possibility of starvation was pushed farther away. As the country developed, the horse has more and more taken the place of the ox. And today there live many people who have never seen a yoke of oxen.

The first halting steps in the improvement of cattle in England had scarcely been taken when the first white man settled in Ohio. The first cattle brought to the new country were no better than the ordinary unimproved stock common

in that period. The new land was forest rather than pasture. Little feed for the cattle could be produced at first. And the cattle of the early Ohio pioneer were indeed a "sorry lot."

But when the superior strains were developed in England, Ohio was quick to see the value of the new blood and imported freely. In 1833 a number of leading stock men formed a company for the importing of English cattle into the United States. Members of the company went to England, purchased the best stock available, and brought it back to Ohio where it was sold.

That the value of the improved stock was realized is evident when it is found that one bull sold for $2,500 in 1837. This importation placed Ohio in an enviable place in the cattle breeding industry. When the first American herd book was published in 1846, almost one-third of the animals recorded were in Ohio.

Following the successful importation of the Durhams, other breeds were introduced. Ohio has now a good representation of the leading beef breeds. And some of the world's best dairy records are held by Ohio cows. The early interest taken by Ohio in cattle of quality also helped to insure her present high standing.

The dairy breeds, Holstein, Jersey, Guernsey and Ayrshire, are well represented in Ohio. Around the cities the Holstein is much in evidence as a producer of milk. In the hilly sections, farther from the city market, the Jersey makes butter efficiently. The Ayrshire, while not the best producer, is capable of standing considerable hardship. Of late years the Ohio Guernsey has made some remarkable records. In each breed Ohio has made a splendid record.

Cattle, like horses, have increased in number in Ohio. There have, however, been greater fluctuations, and the increase has not been so great. From 1840 to 1910 the total number of cattle in Ohio increased from 1,217,000 to 1,899,000. In 1900 the total number was greatest, 2, 117,000. Of the 1,899,000 cattle in 1910, 952,000 were cows.

The early sheep of Ohio were coarse-wooled and inferior in quality and in weight of fleece. In 1814 Bezaleel Wells brought a flock of Merinos from Vermont to Jefferson county. The original stock of the Merinos came from Spain. The animals proved well adapted to Ohio conditions, and was much superior to the animals then common in the state. They were of good body and had a fine wooled fleece of high quality and good weight. This made them at once popular and profitable. Owing to their popularity, several flocks were brought from the east. These introductions increased rapidly in numbers. And that the quality was maintained is indicated by the prizes won by Ohio animals.

Sheep rapidly increased in numbers until 1850, then there was some fluctuation. The greatest number of sheep shown by the census was 4,928,000 in 1870. In 1840 there were 2,028,000 sheep, and in 1910 the number was 3,918,000, a falling off of over a million from the high mark of 1870. Owing to the ravages of dogs, many of the hill sections of the state that are better adapted to sheep than to anything else are now without sheep. If the problem could be solved Ohio might easily break her old record.

The figures given for the total sheep in Ohio do not give a true picture of the wool production of the state. For when there were 2,028,000 sheep in 1840, the average weight of fleece was two pounds. But the fleeces of the 3-

918,000 sheep in 1910 had an average weight of seven pounds.

Perhaps the hog has shown a more startling development in size than any other animal during the last hundred years. The hog in pioneer days was a most disreputable looking animal, small, thin, tusked, wild indeed. He was the typical razor-back, living on what the forest could offer. The beechnut crop was often the only thing that kept him from starvation through the winter. He was built for speed, lived in the open woods, and never made a satisfactory meat animal.

When conditions made it possible and profitable to raise hogs, when a surplus of grain was produced, and when facilities could be provided for proper care, then a better type of hog was brought into the new country. Suffolk, Chester, Berkshire, and China were introduced into Ohio. Berkshires were brought into Warren county in 1836. Other breeds of lesser present importance had been introduced previously, for instance the Shakers had brought big Chinas into Warren county from Philadelphia. The Irish Graziers were imported into Hamilton county in 1839. The Chester White was brought in from Pennsylvania. And later came the Duroc Jersey.

From a number of crosses among different breeds arose a new breed of hogs — an Ohio breed — the Poland China The origin of this breed dates somewhere near 1840. There is considerable difference of opinion regarding the earliest crosses that produced the Poland China. But whatever its ancestry, it proved well adapted to the production of pork in the middle west and forged rapidly into favor. It is today one of the most popular of the lard type of hogs in the United States.

Since its improvement, and since pioneer conditions gave way to a permanent agriculture, the hog has been a favorite on Ohio farms. In 1840 hogs exceeded in number either sheep, horses, or cattle. In that year there were 2,099,000 hogs in this state. In 1850 and until the present, the hog has exceeded in numbers either the horse or the cow in this state, but has been surpassed by the sheep. In 1910 there were 3,152,000 hogs in Ohio, which number is exceeded only by the figures for 1900—3,295,000, and 1890—3,275,000.

The history of Ohio live stock is not merely a history of increasing numbers, but rather a history of improved individual worth. New breeds, and the improvement and better care of old breeds, are the striking features of live stock evolution. From the razor-back to the 1000 pound lard hog; from the disreputable sheep with its two-pound fleece to the present big coarse- and fine-wooled individuals; from the pioneer cow of little worth to the big beef, or the record breaking dairy cow; from the clumsy horse of a century ago to the modern Belgian or two-minute trotter; from the inferior to the superior is the history of Ohio live stock.

Two new bulletins have been issued from the Ohio Experiment Station at Wooster, both dealing with livestock problems in Ohio.

"Dairy Production in Ohio" discusses many of the problems necessary to be considered in arranging milk prices, particularly the costs and factors in production as related to the farmer or dairyman.

Another bulletin "The Effect of Weight or Age on the Rate of Gain of Pigs" deals with a number of experiments to determine at what age pigs make the highest and the cheapest gains.

HOGGING DOWN CORN

By ROBERT MAYNE, '21.

THE system of hogging down corn provides productive labor for practically the entire year so distributing this labor in a manner, which makes it possible for one man to care for a large acreage without hired help and thus causing a considerable increase in the net income.

Another advantage of this system is that it rapidly enlarges the productivity of the land and is designed to conserve soil fertility to the greatest possible degree.

For many reasons labor constitutes one of the most difficult and complex problems on the farm today. Labor is quite expensive, alarmingly inefficient and not easily utilized in the same amount thruout the entire year. Therefore the labor problem may be said to be constituted of the following propositions: (1) a better distribution of labor thruout the entire year and (2) systems that will reduce the extra labor required at certain critical seasons of the year to a minimum.

The average corn belt farmer devotes himself to the growing of staple crops so that they may be tended with machinery since he usually has a large area to farm. Truck crops, fruit, crops, etc., are only grown near large cities where good markets are available. The average farmer, then, growing staple field crops and considering the labor problems has made great changes in farm management; larger teams are used, crops grown that do not compete with labor, and live stock is used to harvest the crop produced. The usual popular four year rotation being corn, rye, timothy and clover. Corn is the only crop given attention in the spring; after it is layed by, hay harvest comes on and the rye may be hogged down.

The hogging down of corn usually begins as soon as the corn becomes hard and as soon as hogs can be brought up on full feed which occurs from about September first to tenth. Often times soy beans or rape is sown in the last cultivation of corn, thus giving pasture for hogs in the corn. They are also valuable for the fertility which they return to the soil.

The second crop of corn may be cut for feed for hogs in winter or may be one-half cut and one-half hogged off. The other crops supply pasture the greater part of the remaining year adding humus to the soil and preventing washing of land.

The principal live stock to be kept is of course, hogs. The fall pigs are turned out on part of the rye field or on a small blue grass pasture as soon as the pigs are old enough to travel well and are approaching the weaning stage, when they are six to eight weeks old the sows are taken to other enclosures and bred for fall litter.

The fall shoats and spring pigs remain on the rye as longs as it is succulent. At about May 15, they are turned into the clover (1st year) and later receive also a corn ration. This is continued until about July 15, two weeks after the rye has ripened in the aforesaid field. During the hogging down of ripe rye no supplement is fed, fresh water being the only additional nutriment.

It has been found that six one hundred pound pigs to the acre will gather seventeen bushels per acre crop in six weeks. Timed in this manner by September first they will be ready to go

into the corn. There they remain until all corn is hogged off or until the hogs are sold; they are usually ready for market between November first and tenth.

If another field is available for permanent pasture, some other phase of live stock farming may be added; as sheep raising, dairying or the keeping of brood mares to do the work on the farm.

In bulletin 143 of Iowa publications, certain information is given directly by the farmer concerning the advisability of hogging down corn. This report shows that of all the farmers that have tried hogging down corn, 94% are in favor of such practice.

It also shows that 70% of the farmers sowed other crops with the corn to be hogged down. The main supplements being rape, rye and pumpkins.

Rape supplements most of the protein and mineral nutrients of the principle forages, which are alfalfa, red clover, rye, soybeans and cowpeas. Size and fatness of hogs determine in a large measure the amount and kind of supplement used. A hundred pound hog requires only such feed as rape and rye with corn while the eighty pound or one hundred pound hog requires milk, middlings and tankage for muscle building. Where soy beans are used with corn a gain of 100% was noticed against corn alone. Hogs in corn field make greater gains than in dry lot. Hogs fed corn alone went off their appetite during wet weather since it was necessary to keep them in the field to clean up.

Young pigs seem to gain most by using green supplements, the average being estimated as twelve pounds of pork from one bushel of corn. Soy beans being most economical in the rate of gain per day. Experimental data points to the fact that 18.37 pounds of pork should be made from every bushel of corn when properly balanced. This is a great deal more than feed lot average. The average field ordinarily used is about nineteen acres and feeding an average of eleven to fifteen hogs per acre, thus cleaning up the field in forty to fifty days.

The proper way to hog off a field is to fence it in portions using twenty-six inch woven wire fence, with well set end posts or by tying to the corn.

The average hogging down of corn far offsets the disadvantages and are as follows:

1. Labor saving—
   a. Husking.
   b. Cribbing.
   c. Reloading.
2. Two handlings of manure are discounted and is also distributed more evenly and no fertility lost.
3. Storage charges are saved.
4. Hogs develop good constitutions.
5. The crop is harvested with practically no waste.
6. Weeds will be cleaned up to some extent.
7. Hogs may follow up cattle and may otherwise save waste.
8. Facilitates and encourages the gathering of seed corn early from standing stalks.
9. Brood sows which are to farrow in the spring, may advantageously run in the fields.
10. Poor stands of corn may be taken advantage of by sowing some supplement crop.
11. Fall plowing is some times possible.
12. Organic matter will be largely added to the soil.
13. Corn is harvested more quickly.

THE RURAL Y. M. C. A.

By CLIVE MCGUIRE.

(Mr. McGuire is secretary of the state county Y. M. C. A. work in Ohio and is therefore able to give us some interesting facts regarding it, which he does in the following article.)

THE County Work Department of the Y. M. C. A. serving as it does the country and small town boys of thousands of rural counties scattered over forty-five states and Canadian provinces, and profiting by thirty years of failure as well as success in rural work, has now been challenged with the appeal to organize one thousand additional counties in the next three years.

The basis of service to rural boyhood bears the title "Christian Citizenship Training Program." The program is the fruit of half a century of specialized Christian work with boys. It is arranged in book form—six books in all—three leader's manuals and three handbooks. These books are published by the Association Press, 347 Madison Ave., New York, and should be in the hands of every worker with boys.

A rural county represents three conditions that furnish an ideal background for a successful piece of boys' work.

First — The boys are naturally grouped. They know each other and obviate the necessity for that tedious "get acquainted" period that makes for slow progress in City Boys' Work.

Second—The group is small enough for an intensive piece of work. A community with a total population of five hundred people—which means a 'teen age boy population of not more than fifty—can be organized for boys' work in the confident hope of doing a one hundred per cent job of it.

Third—The boys of the community are anxious to be led—though they do not know it—and will respond almost to a boy to the personality of a virile Christian leader.

The term "boys' work" can mean a great variety of things. In the present connection, however, it means directing boys thru the normal changes and experiences that blaze the trail from boyhood to manhood until they have reached that state of superlative manhood—physically, intellectually, socially, and devotionally—that we refer to as Christian Citizenship.

With this normal growth in mind for rural boys we must depend upon two factors to bring it about.

First—Christian leadership. This does not refer so much to Credal Christianity as to a type of man whose major interests lie in promoting the welfare of his community, and who is intelligent enough to define its welfare in terms of all fundamental agencies of the community—the home, church, and school.

In passing we can emphatically declare that any community has such leadership either actually or potentially. The purpose of the Y. M. C. A. is to discover, enlist and train this potential Christian leadership and see that it functions in terms of boy life.

In the second place this Christian leadership must be mobilized to touch all phases of the lives of all boys in the community. No impersonal touch will do. It must be personal, intimate, persistent, painstaking, and intelligent. It must reach into the work life, the recreational life, the social life, the school life, and the religious life, helping the boy to put into each and draw from

(Continued on page 62)

HORTICULTURE

EGEVA WISEMAN, Editor; J. C. HOUSER, Assistant.

START AN ORCHARD PROPERLY

BEFORE beginning in the commercial fruit business, we should consider the location of our fruit farm with reference to the general surroundings, such as rainfall, climate, topography and general altitude, whether or not fruit has been successfully grown before in the neighborhood, market conditions (local or general), the accessibility to same, railroad facilities, wagon roads, schools, churches and labor possibilities. Then, we should figure the cost per bushel in getting fruit on the market, as to how far off the railroad you can profitably go to buy cheap land and secure contented labor without running transportation too expensive.

After the farm is selected, we consider the various sites by which is meant the exact spots or exposures on which trees are planted. The air drainage is here of prime importance. Avoid all basin-like places or pockets where cold air stands and frost may be heavy early and late. One of the best illustrations of air drainage imaginable was seen this year on the orchard of Professor O. M. Watson, in Sevnier County above Pigeon Ford. His orchard is on a large flat cove or table on the mountain side with a chain of mountains circling below, forming an elbow and retarding the circulation of air. All of his apples up to a certain row where the tops of the trees were about level with the "dip" for rapid air drainage were completely killed by the cold in early May. In the tops of these trees was a sufficient amount of apples, and on the row above this the upper half of the trees was filled with apples. On the row above this, the entire trees were filled. It is well to remember that not only is the severity of the cold to be considered but also the time the flower will be subjected to a certain degree, as this may determine its destruction. For instance, it may be in a stage of development so that it would withstand 28 degrees for 30 minutes, but if subjected to the same for 60 minutes, it would be killed. It is quite often that the air drainage is an important factor in regulating the time fruit will be subjected to dangerous cold. It may also regulate the degree of humidity and influence frost, for where there is constant or rapid circulation of air, moisture is taken up and in many cases frost is prevented, since we can have frost only when the dew point and 32 degrees come together.

Next to air drainage, we should consider the different soil types. While all of these may be suited to the growing of apples, something can be gained in placing a variety where it will be best suited to the soil type. However, the apple tree is rather cosmopolitan as to soils as some varieties can be selected adaptable to most any type of soil. As a general rule the tree planted in very fertile soil makes a more vigorous, rapid growing and larger tree, but it is considerably later about coming into bearing than the same tree planted on a more medium type of soil. The variation of adaptability of different varieties to different soils and altitudes is showing itself more plainly year by

year; therefore, fortunate is the orchardist who has been able to select varieties best suited to his specific sites.

The following illustrations will give some ideas along this line and probably cause more and keener observations in the future. On a loam or sandy loam with clay subsoil where the altitude ranges from 800 to 1,000 feet, it has been observed that the Shockley, Smith Cider, Yates, and Yellow Transparent (the latter on sandy soils) do well. On a heavier soil, something like a clay loam, about the same altitude, the Delicious, Buckingham, Winesap and Ben Davis have proven very successful and more resistant to certain diseases than when grown on other sites. On a very light top soil with a medium clay subsoil on an altitude around a thousand feet, the Gano, Gravenstein, Grimes and Kinnaird do well. The Rome Beauty, Fall Water, Milam, Cannon, Pearmain and Lowry have proven very successful on altitudes from 1,200 to 1,500 feet. On higher altitudes, the Stayman Winesap, Yellow Newtown, Jonathan, and the York (on some soils) have been very successful. As a general rule, the Arkansas Black and Fort Prize do best on a clay soil at an altitude around 2,000 feet.

By F. D. GARRISON, Field Agent, Tennessee State Horticultural Society.

STONE FRUITS SHOULD NOT BE SET IN THE FALL

Of all fruit trees only apples should be planted in the fall, and even with the apple spring planting is equally satisfactory, according to the department of horticulture at the Ohio Experiment Station.

Cherry and peach trees planted in the fall are quite likely to be killed or injured by winter freezing.

Trees set in the fall do not have a chance to become established and hence are much more liable to winter injury than trees that have passed through one growing season.

It is also pointed out that there is not much advantage in fall planting over spring planting, for the trees may be heeled in a nursery row and kept in good shape during winter time.

Some orchard growers use dynamite to blast out the holes for trees. This is regarded as especially desirable only in soils underlaid with an impervious hardpan or those in which their compactness makes digging slow and difficult. The dynamite should be used only when the ground is dry. When the soil is filled with water the explosion of the dynamite forms a jug-shaped cavity about the size of a barrel in which the soil is very loose.

When the tree is planted the settling of the loose soil allows the trees to drop considerably deeper than they should be set.

——o s u——

"In the blackest soils grow the fairest flowers, and the loftiest and strongest trees spring heavenward among the rocks."—*Holland.*

——o——

BETTER QUALIFIED

Farmer—"I'll give you $5 a day to help me dig potatoes. You can start now."

Dusty Rhodes—"Guess you better do it alone, mister. You planted 'em, so you know where they are."—*The American Legion Weekly.*

——o——

MODERN SCALE

Mistress—What wages do you expect?

New Maid—$30 a month and I talk as I please, $50 a month and I tell half I see, $100 a month and I keep my mouth shut.

CAMPUS ECHO

(Continued from page 19)

A PROPHECY FOR 1952

Jack Lait in American Magazine.

There will not be a King, Emperor, Czar or Kaiser in Europe.

Ireland will be an independent republic; so will Poland.

Liquor will be tabooed the world over —barred at its source.

Women will have full suffrage everywhere.

Socialism will not have displaced republican government.

There will be an aerial route across the Atlantic and Pacific Oceans, with stations or controls at intervals.

There will be telephone connections with and without wireless across both oceans.

All principal cities will have double-decked streets, the lower strata for traffic by vehicles exclusively.

Emigration from one country to another will be rare.

Firearms of all kinds will be obsolete, forbidden everywhere.

Huge artificial lights will make the world as bright at night as by day.

Physicians, lawyers, dentists, will be public officials and will not work for individual fees.

Love will guide matrimonial selection, but Government will refuse to license the unfit, the mismated, the immature, the senile, the damaged.

New York will have 10,000,000 inhabitants and its own Legislature; Chicago will have 7,000,000 and its own Legislature.

——o s u——

Farmers were usually fortunate to get their hay washed clean before putting it up. It is the general opinion, however, that the sun is a better cleanser of hay than water.

O. S. U. ENTERTAINS FERTILITY SCHOOL

The importance of the fertilizer industry was manifested in the conference held at the University and at the Ohio Experiment Station this spring. It was attended by about 150 fertilizer manufacturers, salesmen, sales managers, agents, and soil fertility professors, representing Wisconsin, Illinois, Michigan, Indiana, and Ohio. These soil experts emphasized the selling of only high grade fertilizers and fertilizers which would give the greatest profit.

The Ohio State men represented in the conference were Dean Alfred Vivian, Profs. M. A. Bachtell, G. W. Conrey, E. E. Barnes, R. B. Dustman and Firman E. Bear.

Director Thorne, with Messrs. W. J. Green, F. H. Ballou and Mr. Williams, assisted with the program in behalf of the Experiment Station.

——o s u——

Regular army officers who inspected the military department of the Ohio State University gave it sixth place in efficiency among the institutions where military instruction is given under war department regulations. The Texas Agricultural and Mechanical College ranked first.

——o s u——

Professor Charles C. Plumb took a 10-day trip through the southern states, principally Texas, where he made an inspection of certain sections with reference to their land and livestock. He was much pleased with the things that are being acomplished in that section of the country.

——o s u——

"Some ministers use big words," said Uncle Eben, "de same as a turkey spreads his tail feathers. Dey makes an elegant impression, but they don't represent no real meat."

SADDLE AND SIRLOIN

The Saddle and Sirloin Club has already made arrangements for this year. They plan to give the anual "Little International" which is conducted with the O. S. U. livestock after the manner of the International Stock Show at Chicago. During Farmers' Week a stock judging contest will be held. This will give the farmers of Ohio a chance to see the University stock and to become convinced that O. S. U. practices what it preaches. For amusement the Club intends to have a dance as well as other social events.

ALUMNA

George L. Schuster, '15, is head of the department of Agronomy, Delaware College Agricultural Experiment Station, Newark, Delaware.

Allen L. Baker, '17, has accepted a position with the Pennsylvania State College as assistant boys' and girls' specialist.

Ernest Edward Hatton, '17, is located in Orwell, Ashtabula County, O.

Fannie Bollinger, '18, is teaching Home Economics at West Alexandria, Ohio.

J. T. Wilcox, '18, is a Smith-Hughes teacher in Ridge Township, Van Wert County centralized school.

Herbert Caldwell, '18, has purchased a fruit farm in Hamilton County, Ohio, near Cincinnati.

Wilbur R. Kidwell, '19, formerly assistant professor of Veterinary Science at the University of Idaho, has accepted a position as deputy state veterinarian with the Idaho Bureau of Animal Husbandry. Address, 1816 West Jefferson St., Boise, Idaho.

Florence Watson, '19, is teaching school at Minerva, Ohio.

Madeline Tobias, '19, is teaching school at Minerva, Ohio.

Dorothy Boester, '17, is with the Guardian Savings and Trust Co., Cleveland, Ohio—living at 7600 Euclid Ave.

James D. Marple, '15, has resigned his position at the Boys' Industrial School at Lancaster, Ohio, to become an inspector with the Ohio Bureau of Horticulture.

Jessie King, '19, after a special training course, has been appointed assistant dietitian in the Jefferson Hospital, Philadelphia, Pennsylvania.

Arthur J. Copeland, '15, is state leader in charge of farm management demonstrations, and Mary Ann Graber is assistant state leader of home demonstration agents with the State College of Agriculture, Montana University, Bozeman, Montana.

D. W. Williams, '15, is professor of Animal Husbandry at Texas Agricultural and Mechanical College.

Archie J. Bishop, '15, is engaged in livestock farming, Rural Route No. 1, Delaware, Ohio.

Frank B. Cross, '16, formerly at Oklahoma State College, has accepted a position as county agricultural agent, with headquarters at New Brunswick, New Jersey.

E. V. Hover, '10, is located at 227 South Pierce Street, Lima, Ohio.

H. R. Watts, '10, is on the teaching staff, department of Entomology, University of Tennesssee.

Emmet P. Barnhart, '07, is veterinary inspector, U. S. Department of Agriculture, 537 Federal Bldg., Cleveland, Ohio.

J. Ward Calland, '13, is in the advertising department of the Kilbourne Jacobs Co., Columbus, living at 1431 North Fifth St.

R. L. Shields, '07, is U. S. army assistant development expert in Animal Husbandry at Camp Grant.

C. F. Hyde, '05, is farming near Frankfort, Ohio.

John A. Slipher, '13, is with the agricutural department of the National Lime Association, Washington, D. C., of which Elmer O. Fippin, '00, is manager.

Robert M. Salter, '13, is soil chemist with the Experiment Station at Morgantown, West Virginia, and also instructor in Soils at the University of West Virginia.

Thomas Andrew Rouse, '13, is Professor of Animal Husbandry at the University of South Carolina.

Walter R. Wheelock, '13, is on the staff of a bank at Warren, Ohio.

Walter A. Price, '13, is now Professor of Entomology at Purdue.

Ernest A. Oliver, '13, is farming at Versailles, Ohio.

John C. McNutt, '07, is Professor of Animal Husbandry at Amherst, Mass.

Walter A. Bausch, '13, is the supervisor of the department of General Science at Hughes High School of Cincinnati, Ohio.

R. R. Buchanan, '14, raises Holsteins at Brown's Valley, Minnesota.

Grover C. Wooden, 13, is teaching in one of the Columbus High Schools.

Elmore O. Williams, '13, of Mt. Victory, Ohio, is farming at home.

True G. Watson, '13, is Secretary of the College of Agriculture at Ohio State.

Francis C. Marshall, '13, is farming at Beaverdam, Ohio.

Paul C. Laux, '13, is a salesman for a fertilizer concern.

Walter Harrison Larrimer, '13, is State Entomologist at Charleston, Mo.

D. E. Haley, '13, is instructor of Agricultural Chemistry at Penn State.

Joseph Wm. Ray, '13, is district salesman for the Cleveland Tractor Co., with his headquarters in Chicago.

THE UNFORTUNATE COMMUTER

Too late! The saddest words in all our tongue.

Disheveled and weary, the stout suburbanite sank gasping on a seat in the railway station, and glared at the rear end of the train he has just missed.

To him came the pompous, fussy station-master.

"Were you trying to catch that train, sir?" he asked.

The panting would-be passenger eyed him balefully for a second before he hissed in reply:

"Oh, no!" I merely wished to chase it out of the station!"—*Houston Post.*

——o s u——

STRONG STUFF

"A customer drank a bottle yesterday," replied the truthful druggist—"only one bottle, mind you—then jumped into his flivver, drove madly to the top of Red Mountain and shouted 'Glory halleluah' so loudly he could be heard the length and breadth of Jones valley.'

"Give me two bottles, please."

——o s u——

"What makes the new baby at your house cry so much, Tommy?"

"It don't cry so much," was the indignant reply of Tommy; "and, anyway, if all your teeth were out, and your hair off, and your legs so weak you couldn't stand on them, I guess you'd feel like crying too."

——o s u——

"What a man sows that shall he also reap" has been the motto held by congressmen in the past. The quality of the seed they distributed was seldom good enough to reap a second term.

——o s u——

"Don't permit the young man to drift away."—*Abraham Lincoln.*

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SOIL CHARACTERISTICS

(Continued from page 9)

factor on heavy soils. On certain special crops, such as potatoes, tobacco, or sugar beets it can be used with profit. On the general farm crops potash fertilizers may give an increase in the crop produced, but its use probably will not be profitable.

Nitrogen can best be supplied thru the growth of legumes, but when very low it can be supplied in the form of either sodium nitrate or ammonium sulphate. The use of soluble nitrate fertilizer on pastures and meadows in the spring will give a good return. In using these materials their residual effect upon the soil must be recognized. Sodium nitrate when used over a long period of years tends to develop a puddled or deflocculated condition in the soil, presumably as a result of the formation of sodium carbonate. This result has been very well shown on one of the plots at the Rothamsted Experimental Farm in England, where the use of sodium nitrate has resulted in the development of a very poor physical condition in the soil. Ammonium sulphate on the other hand tends to produce an acid conditon in the soil as a result of the nitrification of the ammonia. The application of lime will correct this condition.

Altho there is much difference in the soils in this group, the general principles outlined will hold for any specific case, if attention is given to the special characteristics of the given soil.

It is evident that the successful management of various kinds of soils will include a recognition of the differences in fertilizer requirements. Large crops will be grown with greatest profit when these relationships are given their proper consideration.

AGSTONE THE MAGIC STONE

(Continued from page 11)

good out of limestone, costing $12, as he gets out of lime costing $24. Difference is $12 an acre in favor of limestone. On forty acres, $480.

Joseph E. Wing said, "Carbonate of Lime is the sort God put in soil when he made it. Burned lime is man's attempt at improvement. Burned lime may help and may harm. Carbonate of lime, that is raw ground limestone, never harms soil."

Herman N. Morse, in *World Outlook*, tells the story of Two Gospels—Christ and Agstone—as follows:

"The white-haired pastor, as he drove slowly through the dust of the pike, newly built between two great cities, was worrying about his parish. The field on the right was untilled; the farm-house deserted. Across the road the children in the schoolyard were poorly dressed. His own church he knew needed painting, but there was no money to spend for paint. He shook his head. The community had changed since he came thirty years ago. Then it had been a land of plenty, of green cornfields and fat cattle, a land of simple neighborliness where the church was the social center. But year by year the crops had grown smaller, and the people had become discontented. More than a third of them had moved away—the land was worn out, they said, and there was no money in farming.

"A puff of summer wind, swirling the limestone dust of the pike, brought with it a fragrance heavy, almost sickeningly sweet. The pastor stopped his horse, got down from the buggy and examined the new growth by the roadside. Yes, there it was, sweet clover. He filled his hands and buried his face in it. 'The Limstone dust has done it,' he said. 'It has sweetened the land again and

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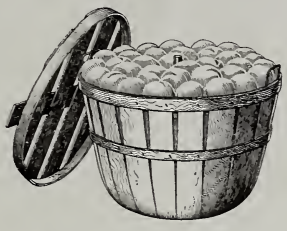

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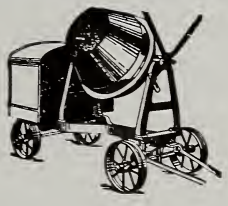

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brought the clover. Soil that will grow sweet clover will grow alfalfa, and no country that can grow alfalfa need be poor.

"Hereafter I shall go out to preach two gospels—the Gospel of Jesus Christ and the Gospel of Limestone—for I know that unless these people accept my gospel of Limestone, my Gospel of Christ cannot reach them."

If a farmer puts money in bank and gets five per cent interest, he is satisfied. If he invests in Limestone, he gets 300 to 500 per cent interest.

There are certain signs and tokens of sour soil, such as clover failure, plantain, dandelion, sorrel, spanish-needles, cranberries, wild-carrot, corn-spurry, horse-tail, mullen, poverty-grass, lean crops and sour farmers.

Every yellow stalk of corn is a yell for tile and Limestone. That stalk of yellow is a sure sign of wet feet and sour soil.

Manufacturers have been unable to fill orders from lack of cars. Many farmers buy Limestone in car lots. They need storage bins. These would enable farmers to haul and spread Limestone when farm work is not pressing.

HOME ECONOMICS

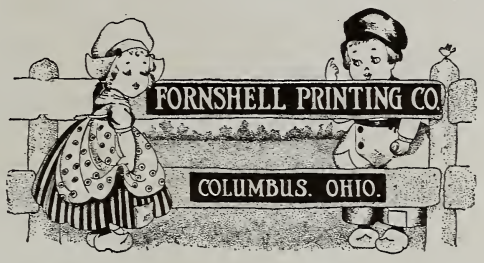
(Continued from page 23)

The best way to blanch vegetables is the live steam method. To blanch this way a kettle with a rack or a cullender can be used. The lid should fit the top of the kettle or cullender real tight, so that no steam can escape. The rack or cullender should be put in the kettle and enough water poured into it to come just below the rack. The water should be kept boiling all the time. Place the vegetable in the blanching cloth, and lower into the kettle so that it rests on the rack. Cover tightly and keep the water boiling the required length of time. Then immerge the vegetable in the cloth immediately in cold water and right out again. In this way of blanching the mineral salts are kept in the vegetables. They cannot boil out in the water as in the old way.

The vegetable is now ready to pack in the jars. Remove the jars from the hot water, pack the vegetables in the jar as tightly as possible. If one is canning corn the jars should not be too full as the corn swells, and if packed to tight the jar will burst. To a quart jar of vegetable a teaspoonfull of salt should be added, then fill the jar with boiling water. The rubber should be dipped into hot water and placed on the jars. Put the lid on and partially seal. If using the Mason jars, seal tight, and then turn back one-fourth inch. The jar is now ready to go into the processor. The jar should not be lowered immediately into the hot water, but by degrees. The water in the processor should be at least two inches above the top of the jars. Watch the water and when it boils begin to count time. The water should be kept boiling all the time. When the jars are ready to be removed, they should be taken out of the hot water bath and sealed tightly. Then turn them upside down to see if the seal is perfect. The jars are now ready to put away for winter use.

DRYING VEGETABLES

Drying furnishes a good substitute for canning, and if successfully done gives an attractive and wholesome product. The process of drying vegetables is a simple one and can be done in the home by the housewife. Care should be used to obtain a uniformly dried product. This can best be secured by having a heated current of air
the product as well as thru



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Vegetables can be dried in an oven, in trays or racks over the kitchen stove, and in a specially constructed drier. If one has an electric fan the trays of the material can be exposed to the air current from the fan. Drying in the sun is more successful in very dry climates. In hot days vegetables may be dried in the sun until the surface begins to wrinkle and then finish in the oven or drier. Care should be taken to protect the vegetable from dust and insects when exposed to the sun.

Small driers or evaporators which resemble an oven can be purchased. These driers are of such a size that they can be placed on the top of an ordinary wood or coal range, or an oil stove. These hold small trays on which the product is placed after being prepared for drying. If it is desirable to dry large amounts, portable outdoor evaporators are convenient. In some sections of the country a home made dry kiln is used. They are made of brick and stone.

If drying is done in the oven of the kitchen range it is well to leave the oven door ajar. Do not have the oven too hot for scorched vegetables do not make an attractive finished product. It is best to frequently note the temperature of the oven. The vegetables can be placed in pans or home made trays. Trays can be made of galvanized wire by bending up the edges one or two inches. The wire trays can be made any size to fit the oven.

If a drier is used the temperature should be carefully watched so as not to get too high. If the housewife has a thermometer the temperature can be kept accurately. The time required for drying vegetables varies. But for most vegetables, after surface moisture is removed should begin drying at a temperature of 110 degrees and then increases gradually to 145 degrees F. and complete drying in two of three hours. The length of time for drying vegetables can be determined by a little experience.

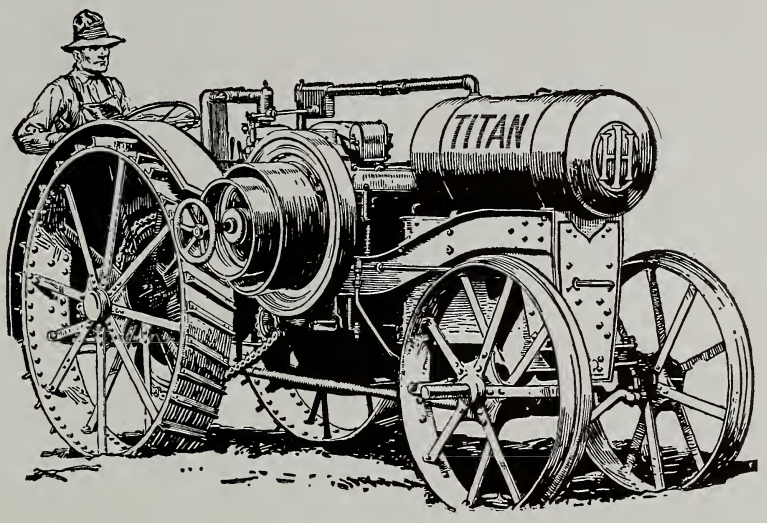
As great care should be given to the selection and preparation of vegetables for drying as for canning. To secure a fine quality of dried products much depends upon having an absolutely fresh, young, tender and perfectly clean vegetable. Vegetables should be washed and should be perfectly clean before spreading in the trays. The trays and other utensils used in preparation should be clean. The prepared vegetable is spread in a thin layer on the trays of the drier or in the pans. The materials should be stirred or turned several times during the drying in order to secure a uniform product.

Dried vegetables when taken from the drier, if completely dried, are very brittle. They can be handled easier and are in better condition for storing if allowed to stand from one to three hours to absorb enough moisture to make them more pliable before putting into bags for storage. Vegetables should be stored as soon as possible. But if it is not convenient to do so, and stand for several days they should be heated before storing. This kills any insect eggs that might be on them. One should be careful not to heat them too high. If a thermometer is used the temperature should not exceed 160 degrees. F.

All dried products should be examined occasionally. Upon the appearance of insects, spread thin layers in the sun, until insects disappear. Then heat to a temperature of 160 degrees F. and restore carefully.

——o s u——

Lots of war gardeners have been able to raise a good crop of blisters.



Fifteen Years of Traction Progress

Fifteen years ago the Harvester Company set its resources and its unrivaled engineering and field knowledge to work at solving the farm-power problem. For fifteen years it has been placing practical tractors on the farms. The result of this long period of accomplishment is the present **Titan 10-20 Kerosene Tractor.**

In the long period during which the TITAN tractor has achieved leadership, no radical change has been made in its design or construction, proving that from the first it embodied the fundamental principles of a successful tractor. It was designed right.

But the Harvester Company could not be content to stop here. The TITAN today has all the refinements and perfections of these progressive years of endeavor. In the factors of durability, economy, comfort, ease of control, and general satisfaction, the TITAN continues the leader.

Because of the farm labor shortage, for instance, many a tractor owner must depend upon his boys, and sometimes girls, for help to carry him over a peakload period. For such an emergency the TITAN has been made remarkably easy to steer. With the present control, a fourteen-year-old boy can handle the TITAN and do a man's work. We have ample proof of this.

Today **Titan 10-20** is securely established in every section. TITAN leads the field, the standard by which others are judged.

INTERNATIONAL HARVESTER COMPANY
OF AMERICA INC.
CHICAGO U S A

SOILS

(Continued from page 25)

was so distinct that it could be easily photographed.

Most farmers will be more interested in the problem of fertilizing the meadows. The acreage of grasses in the United States is second only to corn. Half of this area is straight timothy with an average yield which is not much over one ton of hay. It then becomes essential that this problem should be given a far greater consideration. We must remember that grass is a vegetable or foliage growth. To increase yields there must be a broad and luxurious foliage growth and the element most essential for this growth is nitrogen. The excessive supply of nitrogen produces the big growth of leaves and straw that leads to the lodging of the cereals.

Consequently, from the point of view of a plant, and especially that of forage crops, nitrogen is the most important food element. As a rule neglected soils are naturally most deficient in nitrogen. Experiment has proven that timothy interferes with the elaboration of available nitrogen while clovers are saved from this elimination when the soil is so sweet and supplied with its proper mineral elements under which condition the legumes are able to derive their supply of nitrogen from the air. It has been noticed that mineral elements alone stimulate legumes in ordinary seedings to such an extent that clovers are dominant while on the other hand, by the addition of nitrogen to the mineral elements the grasses dominate the clovers.

While high nitrogenous fertilizers are essential for grass land, the mineral elements cannot be omitted. There must be a proper balance of all essential elements. This balance can be determined by the response and the different elements applied on a particular soil. In the absence of specific evidence it would be the safest to use the three standard fertilizing constituents, namely, ammonia, phosphorus acid and potash. Potassium as a fertilizer plays an important part even though soil analysis shows that there is a large amount of this element in the average soil.

The results of experiments conducted at the Cornell Station, Ithaca, N. Y., give the following evidence. The experiments are divided into plot and field work, covering a period of fifteen years. On the plots a rotation of corn, oats, wheat and three years of grass is carried on. In one case the fertilization is applied only to the grass and in the other it is applied to the cereals. Fertilizers are applied each year when the land is in grass and manure is only applied to the first and third hay crops in each rotation. The topdressing is put on about the last of April.

The unfertilized plots produced about one ton of hay per acre, and it being of poor quality while the most profitable treatment was the double application of nitrogen with phosphorus and potassium, this being equivalent to a 7-7-5 fertilizer. A lower per cent of minerals probably would have been just as profitable. Nitrogen in the form of nitrate of soda and sulphate of ammonia makes first class top dressing. Considering hay only, four plots resulted in a financial loss and one of these plots received an extra heavy treatment of stock manure. A ten ton application of manure compares in returns with a complete fertilizer. However single elements and especially minerals do not produce enough extra margin to pay the additional cost of labor.

It was noticed that where the largest amounts of mineral fertilizers and ma-

NACO BRANDS

Nitrate of Soda

Potash Salts of all grades

Nitra PO

(15% Nitrogen, 15% Potash)

IN CAR LOTS AT LOWEST WHOLESALE PRICES

Likewise, less than car lots for shipment at all times from Columbus, Ohio.

Also manufacturers of Arsenate of Lead, Paris Green, Bordeaux Mixture, Calcium Arsenate, etc.

Write us for anything in fertilizer or insecticide line.

NITRATE AGENCIES COMPANY

408-9 Central National Bank Building

COLUMBUS, OHIO

nure was uesd the increases in the grain crops had a decided margin over the grass crops. To mature the grain the phosphorus is the most essential. For the best grain results manure combined with phosphorus should be applied. An application of lime in addition will give the highest total yield. Other experiments also show that the best system for grass land is high nitrogen applications and for cereals high mineral fertilizers.

One meadow at the college farm that had been cut successively for years was producing one-half ton of hay per acre. By an application of 275 pounds of a 9-6-4 fertilizer or its equivalent as a top dress the yield at once reached the two and one-half mark.

The use of nitrate of soda alone may give a large increase the first year but a sharp decrease for the second year. The complete fertilizer is the safest material and the most profitable to use year after year on grass land, if not better than on grain crops.

VOCATIONAL AGRICULTURE

(Continued from page 27)

culture, and to work with organizations which make for a better citizenship. In the spring he will have many questions come to him in regard to the best way to control injurious insects, prune and spray fruit trees, operate incubators and brooders, treat oats for smut, determine the best fertilizer for a farmer to buy, and in fact all kinds of questions pertaining to the many phases of agriculture.

As the season changes, the kind of questions which he is expected to know and answer without hesitation will change, but he is never without plenty to do.

The Grange, farm bureau, farmers clubs expect him to work with them. This gives him an opportunity to get well acquainted with the people in the community, and to be of service to them in many ways. He will often be asked to speak at meetings, serve on committees, and do numberless things for the good of the community.

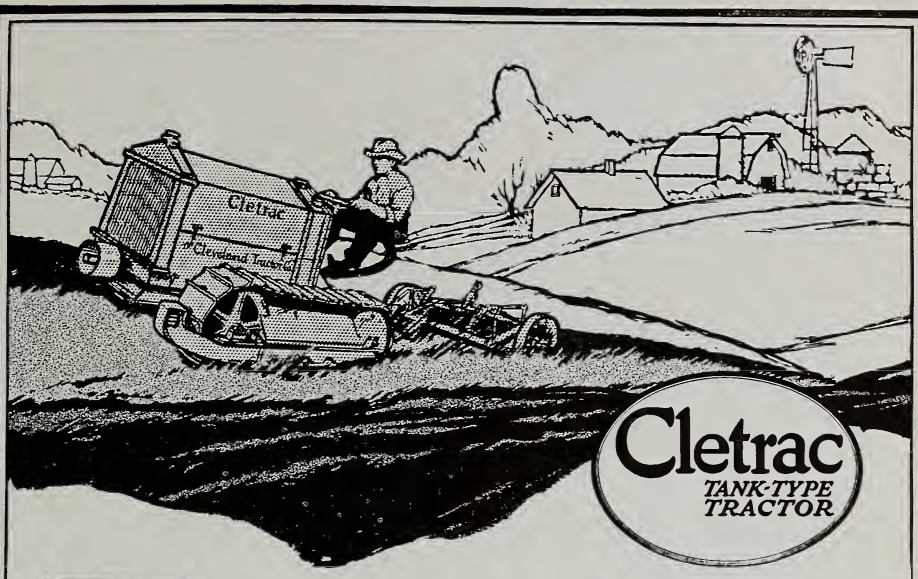
During fair time he often has charge of some department, and conducts livestock judging contests, gives demonstrations in the treatment of cereals for smut, advises farmers in regard to eradicating wheat rust, and does much other similar educational work.

As he goes about his many duties in summer he is always alert for illustrative material for the laboratory, for there is an abundance of it in every community, which is of great value in presenting many agricultural topics to a class.

As the time for school draws near he visits prospective students, and tries to interest them in enrolling in the four year course in agriculture.

During the afternoons and evenings in the fall and winter he may give instruction in agriculture to farmers clubs and granges. A "Short Course in Agriculture," similar to that given in the college of agriculture, is often organized and taught. This gives him a splendid opportunity to get the experience of the farmers in the community, and gives them an opportunity to get to know the Smith-Hughes teacher, and to appreciate his work. It also functions as an agency for bringing to the community many good things in agriculture, which a large percentage of the farmers have no opportunity to get on account of some condition which makes it impossible for them to attend the Short Course in the college of agriculture.

The Smith-Hughes teacher and county agent often confer with each



HARD THIS WAY BUT—

EASY ON A TRACK THE CLETRAC WAY

Learn by Comparison

YOU men now in school can observe and study nearly all makes of tractors. You can weigh one against another and test them out yourself, arriving at a definite choice of the type and make best for practical farming needs.

This is a fortunate opportunity—for when the time comes you can buy or advise wisely.

Investigate the tank-type Cletrac. Notice its rugged construction, its heavy-duty motor, its efficient water air-washer. Watch it in action—see how its broad, ground-gripping treads carry it steadily and surely over any sort of footing without power loss.

The Cletrac releases three or four teams —works faster, too. Picture its all-'round usefulness on the old home farm!

The Cleveland Tractor Co.

"Largest Producers of Tank-Type Tractors in the World"

19123 Euclid Ave. **Cleveland, Ohio**

other about their work and do many things together. It pays each to organize the other, when in need of a skilled man for some line of work.

The Smith-Hughes man has numberless opportunities as a community leader. He is in a position to do splendid missionary work, not only for agriculture, but for many organizations which tend to stabilize and uplift humanity.

It might be said in conclusion that the Smith-Hughes teacher has a man's job. If one is interested in agriculture, in young people, and in those agencies which tend to make better men and women, and is not afraid of work, it will pay him to consider the Smith-Hughes agricultural work.

THE DAIRY

(Continued from page 29)

the hole at bottom of churn, using a sieve or strainer to catch the small particles of butter. Take the temperature of the buttermilk.

8. Prepare the same amount of wash water as there was cream used in the churning and from 4 to 8 degrees cooler than the buttermilk. Wash the butter with this water by revolving the churn rapidly 10 to 15 times. Draw off the water. The object is to wash out most of the buttermilk before working begins.

9. Take the butter from the churn and weigh, after which it is placed on the worker.

10. Add salt at the rate of $\frac{3}{4}$ ounce per pound of butter.

11. Work the butter until the salt is dissolved and evenly distributed. Do not overwork.

12. Pack or print in any convenient form for home use.

The best butter has a waxy body, a bright appearance, and when a slab is broken a grain like broken steel.

Overworked butter has a sticky, salvy body, a dull, greasy appearance and a gummy grain. The keeping qualities are poor.

FARM MANAGEMENT

(Continued from page 31)

as a business organization is filling this place. In the past, it has accomplished little in comparison to the size of the field. But this was due to lack of funds together with a minority of the farmers backing it. Now with increased finances coupled with almost complete cooperation of the farmers, they are not only going to make their voice heard, but also make conditions on the farm better, put agriculture on a more permanent basis, secure a better distribution of their products, fair competition with other labor, and make farming more attractive to their sons and daughters.

The Farm Bureau is an organization national in its scope. For the state organizations are federated into the national. The tasks of this large body are many and large indeed. They deal with national problems such as gathering information concerning conditions of crops, amount of produce on hand and information concerning the various markets. They are ever watchful of national legislation.

The State organization has similar work to perform and besides the organization acts as the link between one county and another. They may secure contracts for material to be distributed thru the counties. They foster specialized organizations, as wool growers, vegetable growers, fruit growers and the like organizations.

The program of the county organization can easily be divided into three main divisions; namely educative, legis-

FARMING IN PALESTINE

Copyright by Underwood & Underwood, New York City

PALESTINE—the Holy Land—birthplace of Christianity and cradle of the highest type of civilization! One of the richest of agricultural countries, her land, because of limestone composition, is practically self-sustaining, and crops are raised year after year without fertilization. What an opportunity has been hers to take the lead in modern progress.

Compare the present day scene pictured above with the American farm, farmer, and farming equipment, and how vivid the realization that Palestine has in no way measured up to the agricultural opportunity which was hers by right of years, distinction and natural resources. In all this time hardly any advancement has been made in agricultural methods.

True, they have not the open way to agricultural progress which is easily accessible to the American farmer—agricultural papers and schools are there almost unknown—but they fail even to avail themselves of the meager opportunities of this nature which may be afforded them. As the result of this lack of information and indifference concerning it, we find present agricultural conditions as illustrated—the same as 3,000 years or more in the past.

The direct opposite of this is the aggressive, modern farmer of the Western Continent. With him today, farming is recognized as a science and a business, and as such he studies it. Not because of necessity, but due to his ambition and pride in achievement, he makes use of every available means of improving his own condition, that of his friends and neighbors, and of his state and nation as well.

Farm publications have performed an enviable part, especially during late years, in furthering this progress and improving farm conditions. Editorially and otherwise, they oppose that which is detrimental to farming interests. Their influence is with every movement designed to make farming more pleasureable and profitable. Through them the farmer is given in detailed specialized information he otherwise would fail to receive. They serve as his buying guide; he knows that no unworthy advertiser has access to their pages. By them is created a desire on the part of present generations to continue, and improve upon, the work done in generations past. The forward looking farmer recognizes farm papers as his strongest ally.

SUCCESSFUL FARMING

THE FARMERS' SERVICE STATION

DES MOINES, IOWA

lative and cooperative. The educational work is supervised by the county agent. This work is varied according to the needs of the community. Soil fertility problems may be studied by having some members make demonstration plots or fields and then have community or township meeting, the county agent helping to interpret the results. Cost account studies taken up and get people interested in trying to find out cost of production. After the cost is secured the farmer will be in a better situation to demand his cost of production plus ten percent or a reasonable profit. The betterment of crops, of live-stock, of the conditions of the community, club work, testing associations, all these are under the county agent's supervision and educational program.

The legislative program concerns the county insofar as they have a committee whose duty it is to find out how the farmers in their county stand on any certain bill that is up before congress. If the farmers are favorable, then pressure may be brought to bear upon representatives by informing them how the farmers stand on the question. And having an organization representing from 85 to 90 percent of farmers, which are "a few" votes, and have its influence accordingly.

The cooperative program is varied according to needs of the county. Specialized organizations are fostered and the Farm Bureau works with them. A business manager is often hired in the county to act as a clearing house for the farmers. He keeps on file in his office an index of each farm, what he has to sell and what is wanted. Thus corn can be shipped to place where needed, the farmer receiving more than local dealer is paying and the other farmer gets the corn cheaper than could be secured from his local dealer. This also is applicable to other produce. Also the business manager may make contracts with local dealers to sell to the farmers certain materials wanted, at cost plus a reasonable profit, ordered in car load lots, unloaded at car and cash payments. They do not intend to eliminate the middleman, but will prevent him from reaping unreasonable profit from the farmers. The business manager is to keep buyers and sellers informed as to market prices of various commodities in which they are interested.

Membership, as registered, is the farmer or the head of the house. But the Farm Bureau is for the rest of the family as well as the head of the house. There is a woman's branch assisted by a Lady Home Demonstrating Agent, who serves in like capacity as county agent for the men folks. Her duties has to do with the work of the women in the home, in the community, girls' club work and the general betterment of farm life from the feminine standpoint.

The primary purpose of membership in the Farm Bureau is not to save a few cents but it is to expand the farming business; seeking profits in increased or cheapened production rather than in small savings which make still more impossible a satisfactory retail service in the community. Farming must be profitable, it must be productive, and it must be permanent. These are the things the Farm Bureau stand for and are striving to attain.

Now you ask, "Why should I join this association?"

"In order to protect yourself against unfriendly interests and to get your rights in the world."

These are attained by slow degrees thru constructive policies. They cannot all be eliminated at once. Being

Does an Agricultural Education Pay?

A recent survey of 1067 Ohio farms shows

Farm operator with high school education or less has average labor income of..... $502

Farm operator with a college education but other than agricultural has average labor income of $644

Farm operator attending an agricultural college has average labor income of..... $1422

If You Expect to Farm Can You Afford Not to Attend the College of Agriculture?

There is a strong demand for men scientifically trained in the fields of

AGRICULTURAL CHEMISTRY
AGRICULTURAL ENGINEERING
ANIMAL HUSBANDRY
DAIRYING
APPLIED ENTOMOLOGY
FARM CROPS
HORTICULTURE
PLANT PATHOLOGY
RURAL ECONOMICS
SOILS

either as teachers or in commercial positions. Courses in all of these lines are offered by the College of Agriculture, Ohio State University, Columbus, Ohio.

Write to the Dean of the College of Agriculture for further information.

the results of many years it will take some time to adjust things so farming is on an equal basis with other business.

Best way to remove obstacles is so to organize our business and its connections as to eliminate grievances and difficulties by natural processes. Using constructive methods rather than destructive. This whole movement is bound to be far more expensive than any other cooperative enterprise ever before undertaken in the name of agriculture. The Farm Bureau is a big business, or it is nothing, and to run it cheaply is to kill it.

The reason why a man should not join the Farm Bureau is that he is not a FARMER.

RURAL Y. M. C. A.

(Continued from page 41)

each the very best. This process of impressing Christian leadership upon boy life obviously involved something other than a short or spasmodic program. The program must in fact begin with the dawning of early adolescence and carry thru until the boy has taken his place as the Christian leader to look back over his shoulder at another generation of boys to whom he owes a responsibility.

Every boy should have a chance to "Chart" himself with the help of a sympathetic Christian man whom he knows well. He should be led to review his standing physically, intellectually, socially and devotionally. This charting is a revelation to most boys. The High School athlete will find himself not even physically up to standard, and falling off miserably in the other phases of his life. The typical Sunday School boy is apt to find his so-called "religion" an evidence of weakness rather than of strength. The "bright" boy may find himself lacking in every day instruction that will count in life.

A problem well stated is half solved. When once the boy visualizes his standing in life the leader has a chance to step in with wise counsel and patient help at the time when the boy is most receptive.

The Christian Citizenship Training Program starts with the boy's knowledge of himself and thru a period of nine years from twelve to twenty seeks to draw out normally all the qualities that will make him a fit citizen for a Christian democracy.

WISE JIMMY

"Jimmy," said the fond mother to her smart eleven-year-old, "what became of that little pie I made for you as a treat yesterday? Did you eat it?"

"No, mama," answered Jimmy with a grin; "I gave it to my teacher at school instead."

"That was very nice and generous of you, Jimmy," complimented his mother. "And did your teacher eat it?"

"Yes; I think so," answered Jimmy. "She wasn't at school today?"—*London Tit-Bits.*

"Whose fine house is that on the hill yonder?"

"That is the residence of Mr. Martin, our wealthiest citizen."

"How did he make his money? In oil?"

"Nope. Worked a couple of seasons in the Kansas wheat fields."

In the Tornado Belt

"Taking your piano lesson, are you, dear?" said the farmer's wife to her daughter.

"Yes, mother."

"Where is your father,"

"In the cyclone-cellar, mother-"—*Yonkers Statesman.*

Increase Production and Keep it Up!

Urging them to *"KEEP UP PRODUCTION,"* which cannot be done without feeding a grain mixture of quality to bolster up the pasture—especially in the fall, *The New England Dairyman*, official paper of some 20,000 good dairymen, says "the outlook for high prices for milk is very promising."

Milk prices have been going up generally this summer. Probably without an exception anywhere in the country, the best prices ever paid for September milk are being paid now.

With September milk bringing $3.50 or more per 100 lbs., a ton of productive grain mixture composed of BUFFALO CORN GLUTEN FEED, wheat bran or millfeed, etc., costing $75 or less, liberally fed with good roughage, is producing from good milkers $200 to $300 worth of milk.

The man who feeds BUFFALO CORN GLUTEN FEED generously, summer as well as winter, never complains of a lack of profit in dairying, nor does he say much about poor cows.

BUFFALO CORN GLUTEN FEED, abundantly fed, makes cows *better* cows, heavier milkers.

FEED UP! Your dealer should have BUFFALO CORN GLUTEN FEED. If he does not, write us for sample and literature, and give us his name.

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BECAUSE it benefits the **HOME**—for it contains many practical suggestions in its **HOME ECONOMICS DEPARTMENT** for the home.

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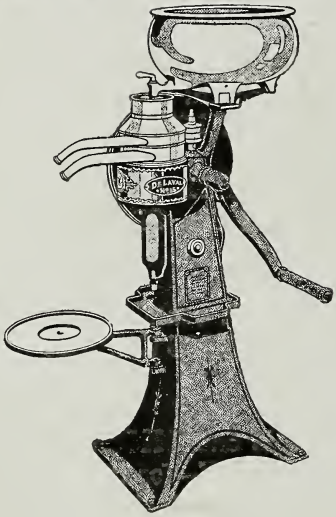

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CREAM SEPARATOR

Quickly pays for itself in these times of high butter-fat prices and scarcity of labor. It does so doubly quick if your present separator is too small, half-worn-out, or you have none at all.

The De Laval Separator skims cleaner, is easier to turn and wash, and lasts longer—that is why there are more De Lavals in use than all other makes combined.

The De Laval is the World's Standard Separator.

A De Laval purchased now will pay for itself before Spring.

See the nearest De Laval local agent at once, or write the nearest De Laval office below for any information desired

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